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in the news

INSIDE

Three magicians (plus one lovely assistant) dazzled and mystified a Kresge audience with numerous tricks and sleight-of-hand.

p6

The women's varsity fencing team split two meets last weekend against SMU and Dartmouth.

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EXCERPTS

After much debate in Washington among House and Senate conferees, Congress is putting the finishing touches on the new energy bill. The compromise legislation will have far-reaching effects on the American way of life, according to reliable Congressional sources who are visiting here during the holiday recess.

The bill would do the following:

Outlaw rolling friction

This is one of several measures intended to reduce the gasoline consumption of wheeled vehicles. The House-Senate conference committee considered outlawing all friction until it was pointed out that such a move would make stopping rather difficult.

Require mandatory personal insulation

Local service stations will be required to provide low-interest loans to individuals desiring to have their blood streams weatherized, thus preventing frostbite during winter and heat prostration during summer months, without need for heat or air conditioning in homes and places of work. All infants born after July 1, 1980 will be required to be so weatherized at birth. This is considered a temporary measure until a cold-blooded human can be developed under programs to be sponsored by the National Science Foundation.

Provide a tax credit for sleep

For every hour beyond eight that an adult wage earner sleeps, he will receive credit on his Federal income tax. The tax credit will be a graduated one, being greater for light sleepers and less for heavy ones. "Sleep is darkness," an Administration spokesman explained, "and darkness keeps the lights out."

Submit the OPEC nations to statehood

This move will immediately reduce our dependence on foreign oil and make the United States energy-independent.

—The New York Times

BU exposure sues administration

By Jordana Hollander

The staff of the *BU exposure* has filed suit against Boston University's President and the Board of Trustees, charging them with violating the students' constitutional and contractual rights by attempting to exercise prior review over the publication.

The Civil Liberties Union of Massachusetts' volunteer attorney Michael Posner filed the complaint in Suffolk County Superior Court Monday morning for the student group. The suit named President John Silber, Dean of Student Life Johan A. Madison, and the Board of Trustees as the defendants.

Posner stated that the suit rose out of the treatment of the paper

by the BU administration. As examples of the alleged harassment Posner pointed out that close to \$6000 of allocated funds have been frozen by the university and that the paper's faculty advisor, Professor of Political Science Howard Zinn was asked to review the paper prior to publication and prevent the printing of "objectionable" material.

Teri Taylor, a staff member of the *exposure* and one of the plaintiffs in the suit, was more vehement in her condemnation of the BU administration. She accused it of conspiring to repress the campus papers and cited previous victims of harassment such as the *BU View*, radio station WBUR-FM, the 1976-77 Yearbook, and the Student Union.

Taylor said that if the university continued with its present negative attitude toward criticism, it would be "committing educational suicide." She added that for a "meaningful education," free exchange of ideas was essential.

According to Taylor, the *exposure* turned to legal action only after trying all other avenues. Even "petition signatures, the approval of the student Allocation Advisory Board, active community support, and the support of the BU Chapter of the American Association of University Professors (AAUP)" have failed to alter administration actions, she noted.

The BU Chapter of the AAUP

had passed a resolution in early December condemning the administration's efforts to control the campus media by instituting a faculty advisor responsible for reviewing material prior to publication. It pointed out that the action taken against the *exposure* was part of a pattern of repression of free expression and of criticism of the administration or Silber.

Zinn said he felt that the suit's filing was an historic occasion, being the first direct legal action against a university aimed at defending the students' first amendment rights, even though they express views critical of the administration.

He called Silber's actions "part of a process that has been in motion for several years," using intimidation to stifle student and faculty criticism. The result, according to Zinn, is the control of BU by "a small elite" and a "dictatorship" by Silber. This control, with its "atmosphere of fear and restraint," may not be "uncommon in a corporation or company," but is especially "reprehensible" in a university, stated Zinn.

She also noted that Silber will not meet with any of the *exposure* staff. "He refuses to have anything to do with the *exposure* except name calling," said Taylor.

Zinn continued, saying that the suit filed had "ramifications beyond the specific incidence" and involved an important point concerning academic freedom.

The preliminary hearing for the complaint will be held in two weeks. Posner stated that he felt certain legal relief will be granted in the form of the release of the funds held by the university and ending interference with the students' first amendment rights.



These four residents of Baker House are seeded entrants in the Second National ACM Student Programming Championship Contest. FOOD BARN is a corruption of the popular food store chain.

Four Bakerites win programming contest

By Steve Kirsch

A team of four computer science majors from Baker House won the Northeast Student Programming Contest held last Saturday at Rensselaer Polytechnic Institute (RPI). By finishing first in a field of nine teams, the group became a seeded entry for the Second National Association for Computing Machinery (ACM) Student Programming Championship to be held in conjunction with the 1978 ACM Computer Science

Conference in Detroit on Feb. 23 and 24.

Abel Lederman '80 organized the group of Larry DeMar '79, Curt Sanford '80, and Dan D'Erramo '80. "He just asked if we wanted to be in it, and we just went along," D'Erramo said. Because no one in the group had a car, they each shelled out \$15 to rent a car to get to RPI in Troy, New York.

The object of the contest is to solve four computer programming problems as fast as possible

using ANSI FORTRAN. All four problems are given to each team at the start of the contest, and the team receives one "problem-minute" for each minute that each problem remains unsolved. The team with the lowest score wins. The teams are allowed only 20 computer runs with no penalty and are given a penalty for a wrong answer.

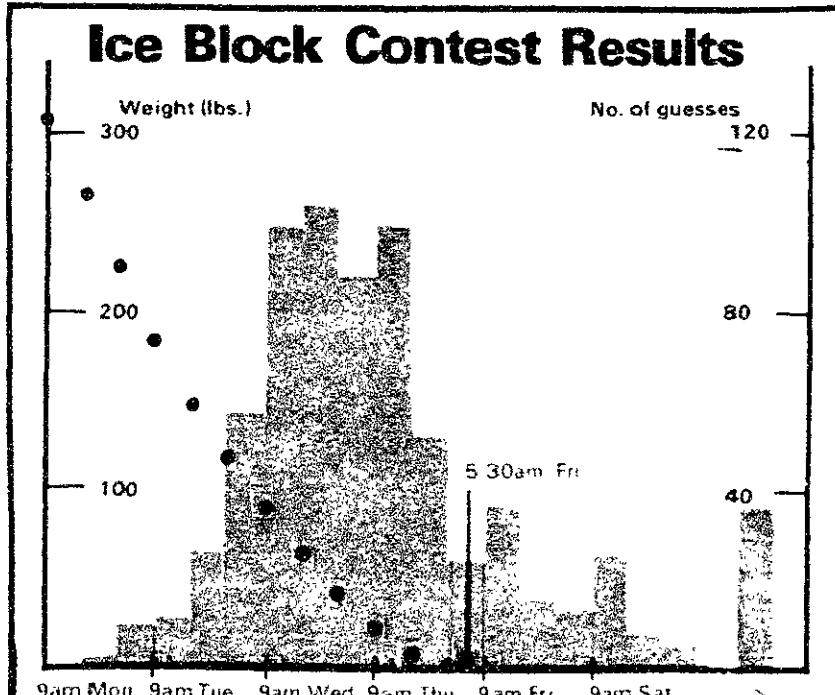
According to DeMar, the group was well prepared for the contest. "Basically, we spent one night studying for it. None of us

had worked on FORTRAN at a long time."

One team member, Dan D'Erramo, had never written any FORTRAN programs before the contest. Unlike his teammates, he had never been employed as a computer programmer. He learned to program computers from two courses required of computer science majors.

Despite this apparent handicap, D'Erramo was the first person to turn in a correct solution.

(Please turn to page 3)



IAP '78 in retrospect

By Richard Cohen

Saturday's performance of the Boston Repertory Ballet Company highlighted a list of over 530 IAP activities offered this January.

Two graduate students, Mark Gottlieb and Harvie Branscomb, came up with the idea of having the Ballet Company perform at M.I.T. Many other students and alumni, according to Mary Unterline, editor of the *IAP Guide*, supported the idea and worked hard for the success of the performance.

Among this IAP's most popular activities was one nicknamed "IAP Engineering Challenge" which was a contest requiring that a person guess the amount of time

it would take a 300 pound block of ice, placed in Lomby 7, to melt. The ice began to melt at 9am on Monday Jan. 23 and disappeared at 5:30am on Friday, Jan. 27. The winner of the contest was Fred Sims who made the lucky guess 5:34am. He was among 718 people who tried to predict the exact amount of time.

The Chinese Cooking Club, according to Jane Sauer, IAP Office Manager, was so popular in previous years that its registration was full before the first *IAP Guide* was even sent out. Sauer noted that cooking clubs and films tended to be well-attended activities. The Mexican cooking club headed by Mike Melendez

(Please turn to page 10)



Members of the Russian House team listen intently as Ed Diamond gesticulates a bonus question in MIT's College Bowl (Photo by Douglas Birdwell)

Russians win College Bowl

By George Cann
and Richmond Cohen

In the second MIT College Bowl held a week ago Tuesday night, Russian House soundly defeated Cognoscenti 235 to 85. Previously, Russian House had convincingly defeated Children of Darkness, 335 to 80, in the semi-finals.

The contest was held before a large audience in Kresge Auditorium and was televised on MITV. The College Bowl Company, who had provided the questions for the General Electric Company sponsored television College Bowl, furnished the questions for MIT's miniature replica of the game. For the first time, the Bowl, which is sponsored by the MIT libraries, was open to all members of the MIT community.

The contest began three weeks ago when the individual members of each team took a preliminary exam. Out of the 64 teams who took the exam, the four teams who compiled the highest scores, Russian House, Cognoscenti (a team of Institute employees, three of whom were from the Personnel Office), Baker Croatoan, and Children of Darkness (two members of the MIT debate team and their coaches), went on to the semi-finals. Russian House had the highest score in the preliminary exams, totalling 3965 out of a possible 6720 points. Team captain Brian Clouse '80 had the highest individual score, receiving 1255 points out of 1680.

After their victory, the members of Russian House revealed that they had prepared for the contest by watching many

hours of videotapes of one of their member's high school College Bowl, as well as studying some trivia books.

The questions, however, were not trivia questions. They tested the contestants' general knowledge of a wide diversity of topics, ranging from literature to geography and from religion to physics.

The event's emcee, Ed Diamond, a senior lecturer in Political Science, added a touch of humor to the tension of the contest.

Except for a minor problem with the scoring, the proceeding ran smoothly under the judging of Professor Wesley Harris, Senior Professor Alvin Hibel, and Mary Rowe.

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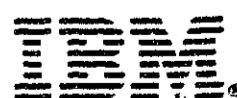
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opinion

MIT's new priorities must be re-examined

By William Lasser

MIT has reached a crucial moment in its history, a time when the basic values and goals which its educational policy espouses must be reconsidered and revised if the institution is to continue to play an important role in American society.

During the past year, I have commented in this space on several seemingly unrelated issues facing the Institute, and *The Tech* has reported on a multitude of news stories which do not seem to be tied together. Yet at the base of all the controversies during 1977 at MIT is the question of this university's *raison d'être* as an academic institution.

We endured two scandals of significance, the *Thursday* and *Grogo* incidents: we faced and still face difficult questions of academic policy: we saw the beginning of what will eventually be a "new college" within the School of Humanities and the effective end of the experimental Writing Program.

All of these stories reveal an institution unsure of its guiding principles. The administration responses to the *Thursday* and *Grogo* situations showed that MIT is undecided as to whether or not to promote freedom of expression. At the same time, the Institute is unwilling to establish procedures beyond the horribly unsatisfactory Committee on Discipline to deal with violations of personal privacy and of the standards of the community, which have never been satisfactorily defined.

The events surrounding the School of Humanities reveal that the role of such subjects in a technologically-oriented curriculum has not been clearly defined, nor has any attempt been made to answer the large scale questions. The role of technology in our society has undeniably changed in the past few decades. Yet MIT has changed its curriculum only piecemeal and haphazardly, ignoring the basic issue: as engineers and scientists continue to assume roles formerly reserved to those whose education was concentrated in the humanities, does MIT have a responsibility to supply a higher level of non-technical education to its students?

The Writing Program story, stripped of all innuendo and personal mudslinging, reduces to the same question. All of those concerned agreed that MIT graduates should have the ability to write well; still, after the smoke has cleared, there is no widespread program to implement this basic policy. Instead, we have a new course in "science writing" which, while it serves an important purpose, is not, as some have asserted, an indication that MIT is pursuing the goal of teaching scientists to write.

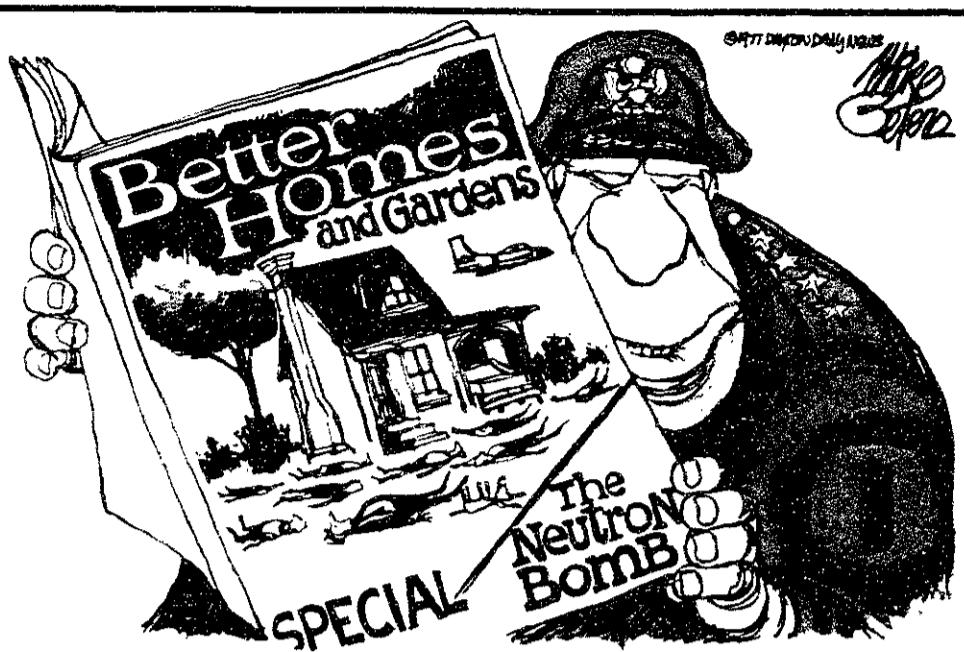
After the riots and demonstrations of the late 1960's, the Institute created the Commission on MIT Education which analyzed and reported on several aspects of campus life. The Commission's work has been largely lost in the calm of the seventies, yet the questions it addressed are as important today as they were then. The establishment of the Commission was at least an attempt to deal with the larger issues involved in an MIT education, although in the end its recommendations were largely ignored. Perhaps the time has come for a new Commission on Education, operating under more serene conditions and with the assurance that its conclusions will be respected and its suggestions implemented.

Some have likened MIT to a vocational school which prepares its students to ply a certain trade. That, while distasteful, is in many ways a correct analysis. For past generations of MIT graduates, success in the engineering and science professions required only the expertise MIT was able to impart. But no more. MIT must commit itself to educating men and women who will be able to deal with the complex technological problems of our society.

This requires a new educational credo. In 1644, John Milton characterized a "complete and generous Education" as one which "fits a man to perform justly, skillfully and magnanimously all the offices, both private and public, of peace and war." In 1978 and for the future, that education must include technological skills — that is why MIT is in a perfect position to provide it. But the other skills such an education must supply are obtainable only through humanities and extracurricular activities, and through the free exchange of ideas and values. The establishment of an environment conducive to such activity must be the goal of MIT as it looks towards the future.

(This is the last column of the "here and now" series of William Lasser, Volume 97 Editor-in-Chief.)

here
and
now



US wields nuclear axe

By Bob Wasserman

Last week a Soviet military satellite equipped with a nuclear reactor fell out of orbit and landed somewhere in Northern Canada. The nuclear material released upon the satellite's crash could weigh as much as one hundred pounds, and what's more, arms experts believe that there are twenty more US or Russian nuclear satellites in space, all of which must come down eventually.

The Strategic Arms Limitation Talks (SALT) II between the US and the USSR resume this year, and a possible Comprehensive Test Ban Treaty on all nuclear tests might be signed by Great Britain, the US, and the USSR. Before these events take place, perhaps we should examine the thirty-year history of nuclear-

arms proliferation.

After the first atomic bombs were dropped on Nagasaki and Hiroshima, the US entered the Cold War with Russia and proceeded to produce a hydrogen-fusion bomb, almost one hundred times as powerful as

perspectives

the A-Bomb. In the 1950's the US diversified its nuclear arsenal and also compiled a vast nuclear stockpile.

According to Herbert York, writing in *Race to Oblivion* (1970), by 1960 the United States had "the energy equivalent of some ten thousand World War II's" amassed in its nuclear arms cache.

Since it is safe to assume that even if the 1960's did not produce a larger number of missiles, the

old ones were not simply dismantled and thrown away, therefore most of these bombs are still here today.

Not getting into all the horrible possibilities of a nuclear war, one has to wonder at this ridiculous figure of the Pentagon's toys. What's worse, this seemingly invincible arsenal didn't prevent the US from entering two wars since 1945, and even losing one. After the Vietnam debacle and all the anti-war demonstrations, it might have seemed logical to believe that the military would be completely ignored for a while, but this was not the case. President Carter has increased defense spending in his budget for the 1979 fiscal year, and this amount accounts for more than twenty-five percent of the total national budget.

Nor are nuclear weapons the sole possession of the superpowers, the US and Russia. South Africa is well on its way to developing a nuclear bomb, despite international dissent. Even such a global power as Pakistan has "the bomb," presumably for defense against its neighbor India, which also has nuclear capacities. The military prowess of these two countries creates one of the most frightening sights in the world, for as India and Pakistan have large, expensive nuclear facilities, they also have high illiteracy and widespread famine.

While the rest of the world is content with missiles, the US has looked into the possibility of a new weapon, the Neutron Bomb, which only kills people and does not destroy property. While the controversial decision by President Carter for further study of this weapon took place only last year, this idea is not a new one. Back in 1961 Freeman Dyson wrote in the *Bulletin of the Atomic Scientists*: "neutron bombs, like hydrogen bombs, will in the long run only complicate our lives, increase our insecurity, and possibly facilitate our extermination."

To help understand the reasoning behind the neutron bomb decision and the nuclear arms build-up in the United States, one only has to realize the priorities of the US military establishment. At present research is going on to develop a high-energy laser for military use. However, it is doubtful that this weapon will be used on people, according to a Pentagon official. He explained "I think it would be the type of weapon you would use on a high value target."

I suppose it would be too much to expect for an ICBM missile to suddenly blow up the Pentagon, so in that case I can only hope that world leaders and military officials realize the seriousness of the war games they are playing.

Johan A. Madison
Dean of Student Life
Boston University
Jan. 30, 1978

Snow storm opening

To the editor:

On Friday, Jan. 20, the worst snow storm in over 100 years hit Boston. In the early hours of the morning, forecasts indicated the severity of the storm, predicting up to 18 inches of snow and high winds. A decision was made by

Personnel to keep the Institute open in spite of these warnings and the already poor road and parking conditions from previous storms during the week. By eight o'clock that morning radio and TV reports advised people to stay (Please turn to page 5)

The Tech

Mark J. Munkacsy '78 — Chairman
William Lasser '78 — Editor-in-Chief
Rebecca L. Waring '79 — Managing Editor
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Wednesday, February 1, 1978

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opinion cont.

→ feedback

Kidnappers demand more IAP

Editor's Note: This letter was found in The Tech's mailbox on Monday morning.

We have the IAP man and he will die unless these demands are met by midnight of the last day of IAP:

1. IAP must be extended thirty more days.
2. The letter "Q" must be stricken from the alphabet.
3. All Iapitate courses must be taught in the furlong stone fortnight (F-SF) system.
4. All classes must be taught in COBOL.
5. A sixteenth week drop date.
6. President Wiesner must eat a lunch at Lohdell.
7. Light must observe the 55 mph speed limit.

We will await a reply in *Tech Talk*.

MIT unfair to employees during snow

Continued from page 4.

home. Still MIT did not change its decision to remain "open and operating as usual." By nine o'clock there was no doubt of the crushing effects of the storm on transportation and the extremely hazardous driving conditions. At mid-morning Governor Dukakis made an appeal for people to stay home or go home if they were in the city. MIT chose to ignore these unusual circumstances and kept the Institute open until 12 noon.

Miraculously no one was seriously injured, but we feel that MIT unnecessarily endangered the lives of its employees by its decision.

Now we find that the biweekly and hourly employees who were either unable to come to work or were sensible enough to heed the many warnings to stay home are being penalized by the loss of vacation or personal time.

We question a policy which is so inequitable and punishes only the lowest paid employees at the Institute for a decision which is already questionable. Employees must rely on the Institute to make sensible decisions on their behalf. We wonder who was responsible for making the decision to remain open on Jan. 20 and suggest that if a particular group of employees is going to be penalized, they should have a representative who will make recommendations on their behalf.

Susanne Fairclough
Sandra Knight
Ann MacGibbon
Jean Mooney
Chip Schramm
Ruth Wagner

The Tech welcomes Letters to the Editor, which should be typed and triple-spaced. Unsigned letters will not be published. An author's name will be withheld on request.

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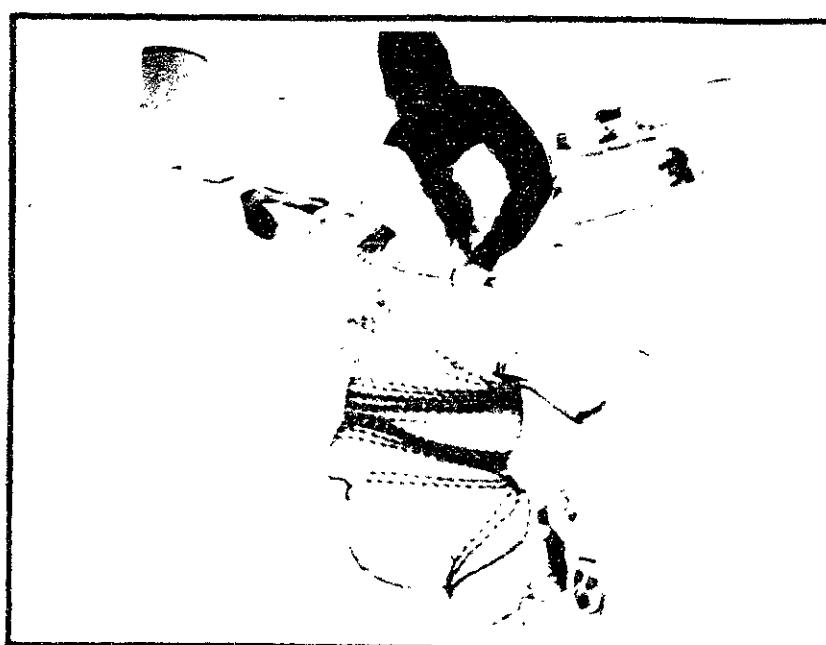


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arts

Classic magic amazes and astounds

By Jordana Hollander

A crowd of 400 watched a talented demonstration of classic stage magical illusions performed by Hank Lee, David Rich, Steve Thomas, and their assistant Cathy in Kresge Monday night.

The evening opened with pretty assistant Cathy producing Thomas out of a stack of previously empty boxes. Thomas then ran through a series of common magic tricks like scarves appearing and changing color, flowers that appear and multiply, doves pulled out of handkerchiefs, and fires created in top hats.

Lee followed with bad jokes and good magic. He burned and then rediscovered a \$20 bill to the confusion of his student victim. He then played musical cylinders with a glass and multiplying bottles of Scotch.

An ISC member was taught by Rich how to turn a handkerchief into a lemon and back again. The mistakes involved in this lesson were more interesting than the transformation itself.

events

Volpone Or, the Fox, Ben Jonson's hilarious comedy, will be presented by MIT Dramashop as its IAP production. Performances are Fri. and Sat., Feb. 10 and 11, and Thu., Fri., and Sat., Feb. 16, 17, and 18, at 8pm in Kresge Little Theater each night. Tickets are \$2.50 (\$1.50 on opening night only). For reservations call x3-4720. Tickets will also be sold at the door and in Lobby 10.

Course 21 announces a new acting course for the spring semester: 21.116 Acting II (3-0-6). The prerequisite is 21.119 Experimental Video Acting Workshop or equivalent acting experience. It is the sequel to 21.119 and video equipment will continue to be used as a critical tool. The class will meet Mon. & Wed., 3:30-5pm and will be taught by Naomi Thornton. This course may be used to fulfill a Drama Concentration. For further information, call x3-2908.

Two of Houdini's most famous escapes, from a straitjacket and Metamorphosis, were attempted by Thomas. He emerged mussed but triumphant from the jacket. Thomas then exchanged places with Cathy, at the time locked in a chest. As the curtain came down Cathy was attempting to release him from the handcuffs.

The three combined efforts to remove a set of swords from a box so Cathy could reappear on stage. Thomas continued with the illusion of three ropes, a changing picture, tissue paper torn and recombining into a flower and a hat, and an egg trick where he nearly covered the head of a student volunteer with egg.

After an elaborate card trick by Lee, Thomas performed the famous Zig-Zag illusion where the cute assistant is cut in three and the middle portion pushed out of line. The show ended with the three magicians pulling successively larger bouquets out of empty cylinders.



Magicians David Rich, Hank Lee and Steven Thomas take their bows over bouquets of paper flowers they had pulled out of empty cylinders. The three magicians gave an exhibition of classical magic to an audience of 400 in Kresge last Monday night. (Photo by Mark James)

Abarca, Perry dance in exhibition

By Veronica Tomezyk,
Leigh J. Passman, and
Daniel Togasaki

Lydia Abarca and Ronald Perry of the Dance Theatre of Harlem electrified a packed house at Kresge Auditorium last Saturday night, climaxing a week-long IAP program entitled *The Ballet*. The program, sponsored by the MIT Graduate Student Council, featured the Boston Repertory Ballet (BRB), joined by three guest artists from the Dance Theatre of Harlem (DTH). During the week there had been lectures, demonstrations, and classes conducted by the Boston Repertory Ballet, and Ballet Master Samuel Kurkjian, and BRB teacher Leo Guerard.

The first piece, *Soirée Musicale*, had the energy characteristic of classical folk dances, but lacked unity, precision, and good technique. The matching of partners was poor, but excusable, as only two male

members of the BRB participated in this performance. Apparently, not enough time was spent rehearsing as couples or as a group for this dance. The partners were not sufficiently conscious of each other, frequently losing eye contact. Their poor timing and mismatched styles were too sloppy for classical ballet.

The second piece was a sweeping contrast. *Pas de deux* from *Agon*, choreographed by George Balanchine (New York City Ballet), featured Lydia Abarca and Ronald Perry. They were fantastic as a pair, as well as individually, exhibiting excellent control. The dance was interesting and their flawless technique made it a success. The audience responded with thundering applause. Critic Walter Terry wrote in 1959, "... *Agon* has no plot, no specific emotional coloring, no dramatic incident. It does mirror the rhythms, the dynamics, and the witticisms of the

music..."

The third piece, entitled *Cole Porter Suite*, was danced to a collection of Porter's more popular songs, played by Herman Weiss and sung by Susan Allen. Choreographed by Kurkjian for this production, the dance poked fun at the songs, exaggerating their meanings and feelings. Certain individuals danced well, showing good technique in what should have been a crowd pleaser.

Abarca and Perry returned for *Grand pas de deux* from *Le Corsaire*. From the moment Perry entered with a tremendous flying leap, the audience was captivated by the two artists. The four sequences depicted a pirate's pursuit of a beautiful young girl. Abarca and Perry displayed perfect technique and were repeatedly interrupted by spontaneous bursts of applause. The two artists, well aware of their

(Please turn to page 7)

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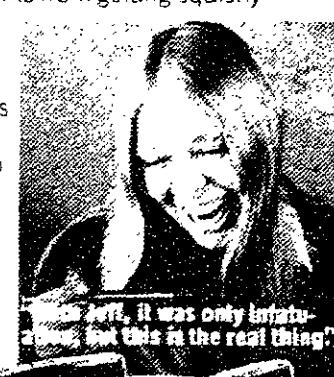
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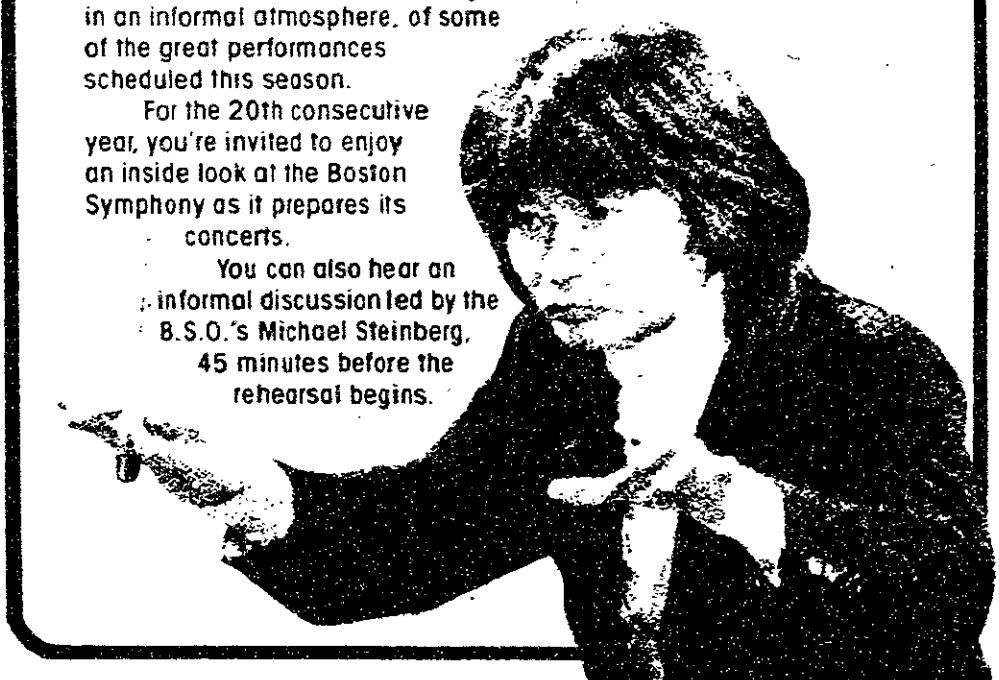
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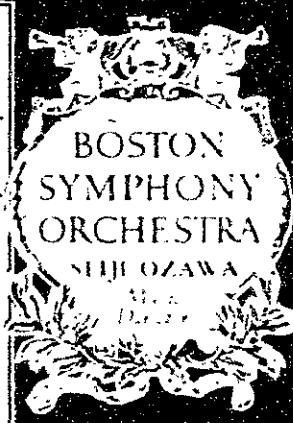


DATE CONDUCTOR WORKS BY
FEB 22 SEIJI OZAWA RACHMANINOFF, RAVEL
7:30pm Alexis Weissenberg, Piano

MAR 29 GENNADY ROZHDESTVENSKY WORKS BY MOZART, SHOSTAKOVICH

APR 26 SEIJI OZAWA WORKS BY LISZT, WAGNER
7:30pm SOLOISTS Jessye Norman, Peter Hoffman, Gwynne Howell

Two (2) admissions to open rehearsals is \$3.50 at Box Office. You may also purchase the 3 open rehearsals as a series at the reduced price of \$9.00. To purchase for the 3 rehearsals by mail, send a check made payable to the Boston Symphony for \$9.00 and mail to Box Office, Symphony Hall, Boston, Mass. 02115. Ticket sales subsidize the musicians pension fund.



arts cont.

Ballet masters ignite crowd

(Continued from page 6)

hold on the audience, concluded with a dynamic finish which brought the entire crowd to its feet for a standing ovation.

The final piece, *Speed Zone*, was a modern dance choreographed by Kurkjian. The dancers, including Keith Saunders of DTI (who also appeared in *Soirée Musicale*) were well suited for the style of this piece, and were able to perform their best. The lighting was very effective, and provided interesting accompaniment to the

choreography by throwing colorful shadows on Kresge's walls. The piece featured Jacquelyne Curry in several beautifully performed solo movements.

The Boston Repertory Ballet gave a fine show, with a splendid variety of dances. The three guest artists from the Dance Theatre of Harlem turned in superb performances. The Boston Repertory Ballet's attempts at classical ballet, however, were disappointing, whereas their modern dancing was very well done.

Genesis tour captured

Seconds Out — Genesis on Atlantic Records.

By David Shaw

When Peter Gabriel, lead singer for Genesis, left the group in 1975, many feared that Genesis had come to an unfortunate end. However, the group recovered quickly due to the efforts of drummer Phil Collins, whose voice is so close to Gabriel's that the two are virtually indistinguishable. The band continued on, releasing two albums, with Collins serving the dual role of lead singer drummer. Their latest album, *Seconds Out*, is a live documentation of Genesis' success.

The album, recorded in Paris, features the best of the group's latest compositions plus renditions of their earlier classics. Collins' drumming duties have been taken over by two others: ex-Yes-man Bill Bruford for the 1976 tour; and for the '77 tour, Chester Thompson, formerly with Weather Report and Frank Zappa.

Side one opens with *Squonk*, which begins rather quietly but rises to an almost chaotic pace as it progresses. In *The Carpet Crawl* (on the *Lamb Lies Down on Broadway* album it is titled *The Carpet Crawlers*), Collins delivers a performance that makes Gabriel's pale in comparison. His singing is equally good in *Robbery*, *Assault and Battery* and *Afterglow*. Side two opens with two songs from the *Selling*

England by the Pound album: *Firth of Fifth* and *I Know What I Like*. The first is slightly lacking — I miss the long piano intro and Gabriel's flute. The second takes a while to get started, but the wait is worth it. Next is *The Lamb Lies Down on Broadway* which the group performs at an almost breakneck pace; this is followed by the closing section of *The Music Box*.

All of side three is taken up by the group's tour-de-force *Supper's Ready*. Collins injects a lot more excitement into the vocals while the band cuts some of the original's frills. Both changes make this rendition of the song more direct and flowing, which is an improvement. Side four should be called the drummers' side, because it features the talents of Collins, Thompson and Bruford. Bruford lends his efforts to *The Cinema Show*, and Thompson contributes to *Dance on a Volcano*. However, the best was the last cut, Collins and Thompson power through a drum solo that must be listened to with the bass cranked up, then launch into an astounding high-energy version of *Los Endos*, which fittingly closes the album.

Having seen Genesis live in 1977, I think this album perfectly recaptures the excitement of the group's concerts, as well as being one of the finest live albums to be released in recent years.



The Average White Band

AWB's sound raw but clean

By Drew Blakeman

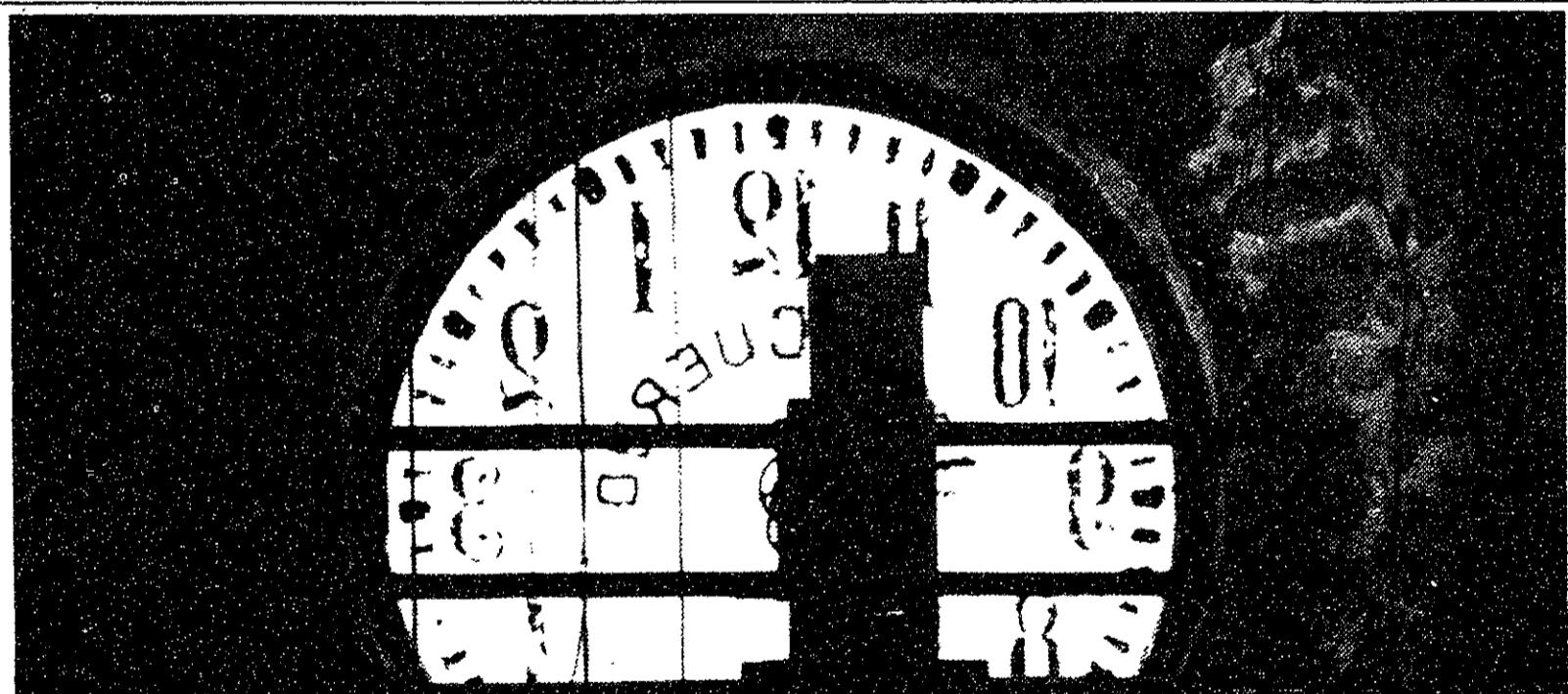
The live performances of many groups sound very little like their studio recordings due to the marvels of electronics, effects like echoes and overdubbing. One group which has never needed to rely on electronic gimmickry for their success is the Average White Band. The sound of AWB is virtually the same whether in concert or on records. Their music is highly amplified, but nothing else is done to alter its intrinsic characteristics.

In their concert at the Orpheum last Saturday, Jan. 28, AWB played its particular brand of disco quite well. The band's fast-paced music kept the capacity crowd on its feet for much of the performance. Of special note was the quality of the sound, which was not over-amplified or distorted.

AWB bases its uncluttered sound more on the superb percussion work of Steve Ferrone and innovative saxophone instrumentals than on vocals. A notable exception is *Work to Do* featuring Hamish Stuart on lead vocals. This song has much longer lyrics than the typical one-line AWB song, and Stuart displayed his vocal talent well.

ramblin'

Followed by a single half-hour-long encore, AWB performed as many variations on *Pick up the Piece* as they could think of during that half-hour, including introductions of the six band members, solos by each, and a lot of audience participation. The crowd was expecting a longer show, and became nasty when the house lights were turned on after only 90 minutes of music had been played. The group did not perform *Cut the Cake*, one of their most popular numbers.



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Andrew Cohen, '58, Vice President, Programs
Jerry Heller, '67, Vice President, Engineering

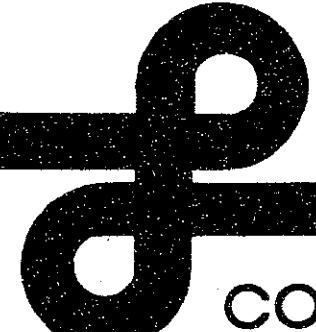
Art Ross, '72, Technical Staff
Larry Jankauski, '76, Technical Staff
Steve Blake, '77, Technical Staff
Lindsay Weaver, '77, Technical Staff

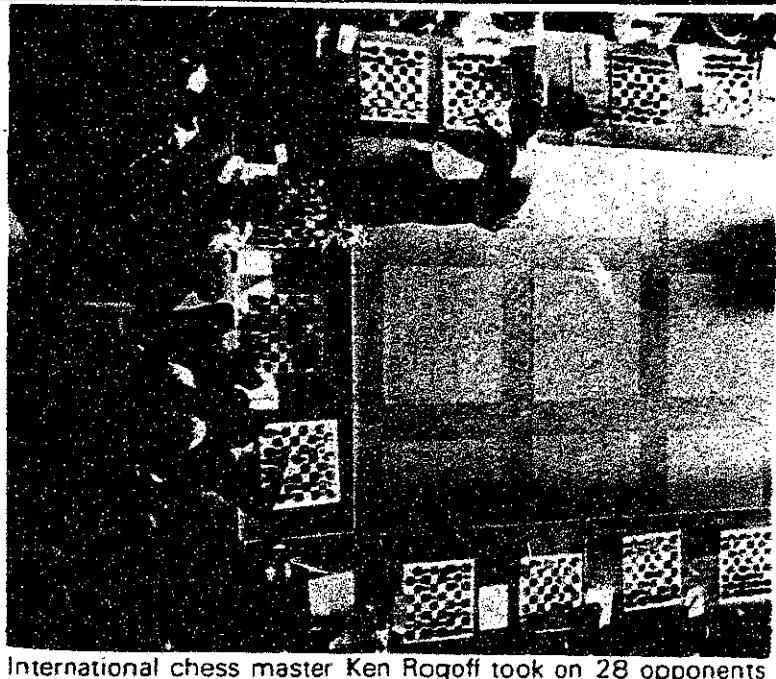
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International chess master Ken Rogoff took on 28 opponents simultaneously in Lobby 7 last Friday. The result: 23 wins, 2 losses and 3 draws. Rogoff, a third year graduate student in economics, is the fifth-ranked chess player in the United States. (Photo by Steven Solnick)

55mph on a bicycle?

Editor's note: The Tech received the following article from Professor of Mechanical Engineering David Wilson. Wilson is on the Board of Directors of the International Human Powered Vehicle Association.

In the past decade man has reached the moon, flown a pedal-powered aircraft in a closed 1-mile circuit, and climbed Mount Everest from every conceivable direction. What next? Dr. Allan Abbott, a young M.D. from Dana Point, California and a renowned high-speed bicyclist who appears twice in the Guinness Book of World Records has now offered \$2500 to anyone who can break the national 55mph speed limit in a human-powered vehicle. Can it be done? Dr. Abbott thinks so.

Recently, at the International Human Powered Speed Championships at the Ontario Motor Speedway in California, two slick streamlined pedal-powered machines broke 49 mph for the first time in history. Dr. Abbott himself rode a bicycle of his own design at over 48 mph. The fastest vehicle had 4 wheels and was propelled by hand and foot cranks with the rider pedaling furiously on his stomach. Another was a standard racing tandem bicycle. In all of the fastest machines the riders were completely enclosed in light sleek streamlined plastic shells.

At near 50 mph, wind is almost hurricane force, so streamlining is a must if a human power plant is to be used. To win the Abbott Prize, it may seem easy to increase the speed only 6 mph over what has already been done. However with the present generation of machines, at 55 mph the cyclists would have to expend 30 to 40 percent more energy than they would at 49 mph. Riders would have to put out about 1.5 horsepower to do this. Obviously,

then, to win the prize, many improvements must be made.

After breaking two world bicycle speed records, Dr. Abbott has recently decided to retire from active competition. In 1972 he rode a specially designed bicycle behind a race car at over 140 mph on the Bonneville Salt Flats in Utah. The race car completely shielded the bicycle from the wind thus making such incredible speeds possible. This record still stands. In 1976, Dr. Abbott broke the world unpaced bicycle speed record at 47.8 mph for 200 meters with a flying start. In this type of race, riders are all on their own with no towing, motor pacing, or stored mechanical energy of any kind permitted. In 1977, Abbott improved this speed to 48.84 mph, but still faster was Ralph Therri who holds the present record at 49.38 mph.

Dr. Abbott's offer to pay anyone \$2500 who can break 55 mph in an unaided human-powered vehicle, is intended to stimulate competition and technological improvement in human-powered transportation. The California State Highway Patrol has promised to issue a complimentary traffic ticket to anyone who wins.

The rules are simple. Any machine is legal provided there is no stored energy of any kind. Springs, motors, flywheels, batteries, pressure cylinders, etc., are prohibited. The vehicle may have one or more riders in it, and must cover 200 meters with a flying start in 8.13 seconds or less. The course must be level and wind must be less than 4 mph. Electronic timing must be used. No towing or motor pacing is permitted.

For further details on the Abbott prize, and how to become the world's fastest human, contact Professor David Wilson at MIT.

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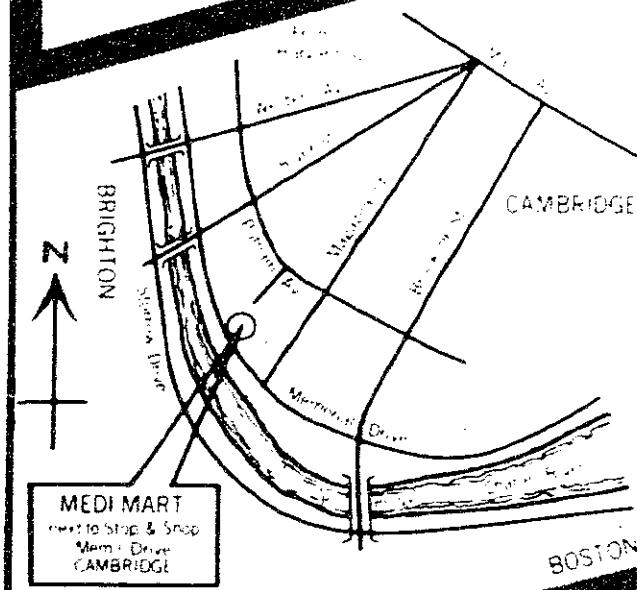
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Highlights of IAP '78

Continued from page 1

'78 was one of these. Also, the "Ascent of Man" series and, for the second consecutive year, the "Leyman Lectures" drew large audiences. Sauer added that other popular lecture series included "Home Repair," "Mountaineering, Rescue and First Aid," and "Career and Lifestyle Discussions." She said that the Mechanical Engineering, Physics, and Earth and Planetary Sciences Departments all gave informative lectures. One of the more unique lectures, which received city-wide attention, was "Horse Race Handicapping."

As a result of the numerous activities this January, many lectures or activities occurred simultaneously. Enterline maintained that the scheduling is done almost solely by the person or persons conducting the activity. She said that the individuals who schedule an activity merely call up the IAP office and give the time that they prefer. She said that she tried to encourage these people not to choose time slots which were already filled with activities. She also attempted to prevent a large number of activities from falling within the same week of IAP. She also hopes that in the future, more activities will be scheduled during the evening.

In order to help students remember when and where the activities occur, large black bulletin boards were placed in Lobby 7 containing the list of events for each day. Sauer, who had thought of the idea, hopes to make more improvements on advertising the schedule for the activities next year.

Both Sauer and Enterline were pleased by the enthusiasm of the students, who they said suggested numerous topics for IAP activities. One student requested

that a lecture be given on "Catastrophe Theory." Soon afterwards, the Math Department arranged for this lecture to be presented.

Another suggestion was presented by Eugene Lui, who wished to conduct a class on T'ai Chi, the classical system of Chinese exercise. According to Sauer, Lui was sure no one would come, but instead was very happy with the large number of students who attended.

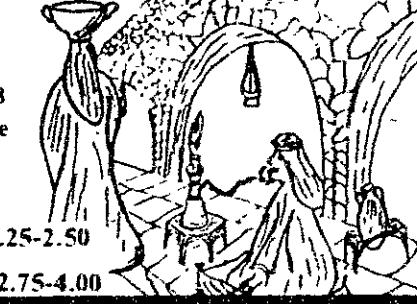
The Tech survey revealed that 75 percent of the undergraduate population was at MIT during the second week of IAP. Another survey conducted by the IAP Policy Committee last year indicated that this percentage is typical for that time of month.

IAP began as an experiment eight years ago. Joel Orlen, Chairman of the IAP Planning Committee, said that he believes that IAP has become "an integral part of the education program at MIT." He feels that the diverse learning opportunities provide an educational experience that most students probably would never get the chance to have.



Doc Edgerton leads the audience at the Soap Bubble Carnival in a round of "I'm Forever Blowing Bubbles." Participants in the show, which packed Room 66-110, learned about some of the mathematical principles which explain the behavior of soap bubbles and films. Holding the microphone for Edgerton is Dr Frank Morgan, the originator and ringmaster of the carnival. (Photo by Tom Russ courtesy *Technique*)

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notes

* Registration for third quarter MSEA education classes will be held Feb. 1-6, 7-8:30 am in the duPont Classroom.

* The MIT Dance Workshop will have its first meeting on Wed., Feb. 8, 8:30-10:30 pm in the I-C am Lounge in duPont. The Workshop is directed by MIT's own choreographer dancer Beth Sorenson. In addition to regular technique and improvisation classes, the workshop plans to present a student performance in the spring.

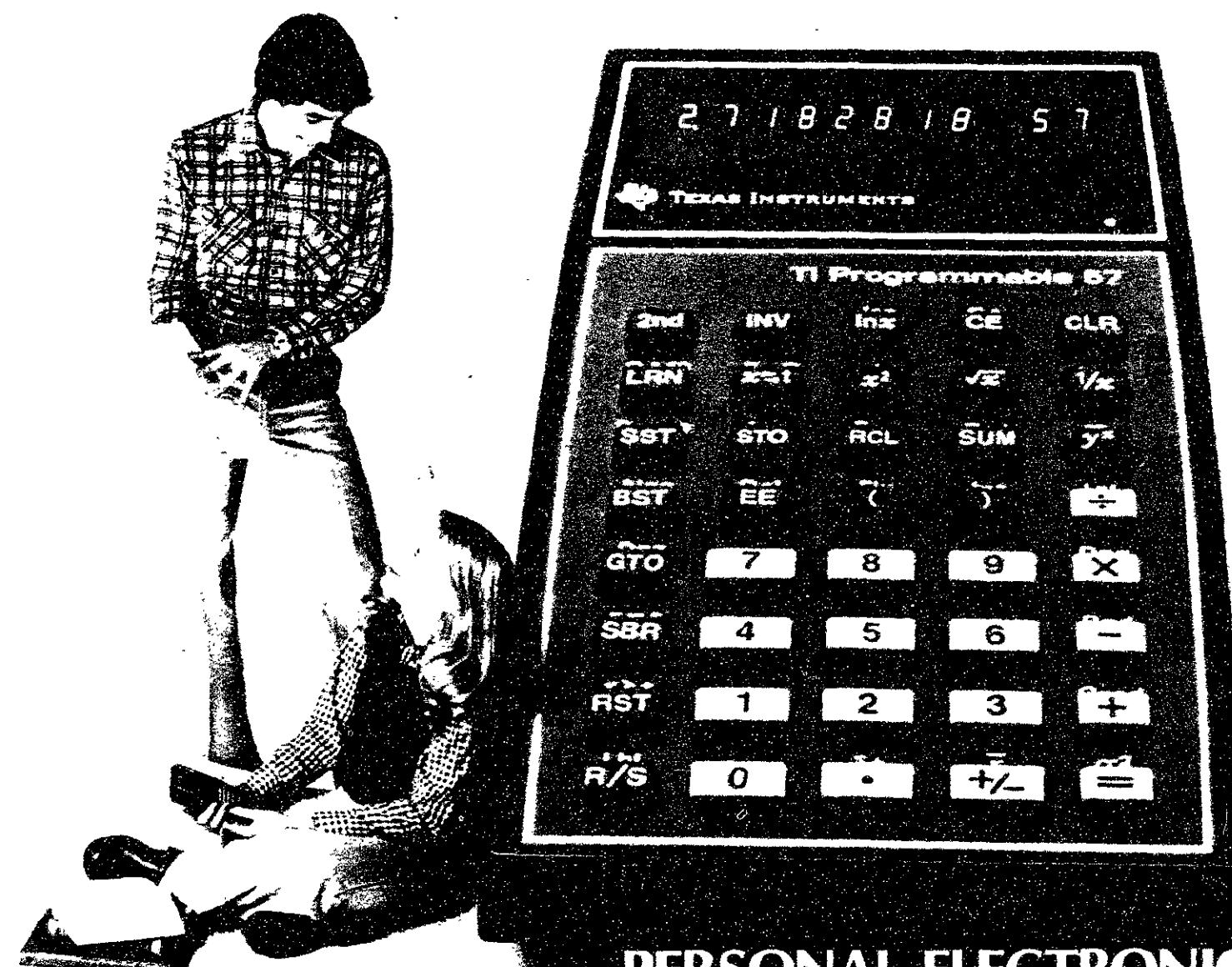
* INTERFACE, a non-profit educational association, is sponsoring a necessary conference this weekend on prospective parents, health professionals, and others interested in the future of children, entitled "Choices on Parenthood." For more information, call 964-7140.

* The World Economy in the Year 2000 is the Cambridge Forum topic for Feb. 8. The featured speakers are Dr. John Perkins of Harvard and Anne P. Gersbach of Brandeis University. For more information call 876-7772. Free

* Students and faculty members can take advantage of a 50 percent discount. Allegheny Airlines offers for passengers departing on Saturday and returning on flights departing before 12:01pm the following day. This Saturday flight sale is effective Jan. 2 through March 19, 1978.

* The Harvard Graduate School of Design presents an exhibition "Spirit of the Landscape," from Jan. 16 through Feb. 29, in Gund Hall lobby, 28 Quincy St., Cambridge. The exhibition includes 70 photographs of the upper Franklin wilderness area, taken by Arthur Boutiller, head of National Park Planning, Parks Canada. Boutiller had access via helicopter to areas of the Franklin Mountains never before seen. The exhibition is free and open to the public, 1-5pm, Monday through Friday. For further information, call 493-4731.

* The Firelock Trio, an ensemble formed by flutist Paul Fried, cellist Ron Feldman and harpist Elizabeth Morse will perform this Friday at 8pm in the Brockton High School Fine Arts Building. Tickets are priced at \$3 for adults and \$2 for students and senior citizens and may be reserved by calling 588-5026.



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sports cont.

Dartmouth kills W Swim

By Gregg Stave

The MIT Women's Swim Team was devastated by Dartmouth's speed and depth last Saturday, losing 110-19 at the Alumni Pool.

Against a far superior Dartmouth squad, MIT could manage only four second place finishes in fifteen events. Only one swimmer, Sheila Konecke '80, came close to winning an event. Konecke's time of 1:18.2 in the 100 yard breaststroke was short by less than two tenths of a second. Captain Tina Kangas '78 touched out an opponent to finish second in the 50 yard breaststroke with a 38.3 second clocking. The other bright spots for MIT came in the

100 yard individual medley and in the 200 yard freestyle. Ruth Harris '81 was second in the medley with a 1:19.1 finish. In the freestyle event Judy Snodgrass '81 also picked up a second place completing the eight laps in 2:19.6.

Outstanding swims were recorded by Dartmouth in several events. In the 200 yard freestyle relay Nancy Gildan recorded a remarkable 25.5 second split. Later in the meet, four Dartmouth women swam an 800 yard freestyle relay as an exhibition event. Their 8:31.0 performance qualified for the Nationals.

Prospects for the rest of the

season are not as grim as these results might indicate. Individual progress is being made. MIT is facing their strongest competition at the beginning of the season. The team was also handicapped by the absence of a diver and by an injury to freestyle-butterfly Karen Fabricius '80. Even though the record stands at 0-2 in their second year as a varsity team there is still a good chance they will repeat last year's winning season.

More than half the team spent the first two weeks of January training in Melbourne, Florida. Averaging better than 10,000 meters per day, the women worked out twice and occasionally three times a day.

Tomorrow the women travel to Southern Massachusetts University, and then go to Connecticut on Saturday to face Trinity.

Swimming season now 3-1

(Continued from page 12)

mann is also happy with the performance of the divers, especially Ken Brady '79 who dove both 1 and 3 meter on Saturday. The divers are very inexperienced; two of them have been diving only a week. Battersman is optimistic that his squad will turn in some good performances as the season

progresses and they gain more experience.

Tonight the team faces Amherst in what Coach Benedict says is going to be a really tough meet. He sees the medley relay as the key to the meet. "If we can win the medley relay we have a good chance at beating them."

Scoreboard

Men's Swimming 73, WPI 40

Men's Swimming 69, Lowell 43

Basketball 65, Ursinus 91

Basketball 48, Coast Guard 53

Women's Basketball 15, WPI 51

Fencing 16, Dartmouth 11

Fencing 16, SMU 11

Women's Fencing 6, Dartmouth 10

Women's Fencing 9, SMU 7

Women's Gymnastics 92.15, Yale

128.1

Hockey 3, Plymouth Union 6

Squash 1, Williams 8

Wrestling 13, New York Maritime 41

Wrestling 6, Central Connecticut 34

Track 77, Bowdoin 59

W Fencing is struggling

(Continued from page 12)

ment's mistakes to chalk up a win for the 9-7 victory against SMU.

The loss on Friday was an upset to MIT's traditional record of wins against Dartmouth. Prettyman took three out of four bouts, one of them in a convincing 5-1 win against J. Sudikoff

on deck

Wednesday

Men's and Women's Varsity Fencing vs. Brown 7pm
Women's Varsity Gymnastics at URI 7pm
Varsity swimming at Amherst 7pm
Varsity Wrestling at Boston College 7pm

Thursday

Varsity Squash at Amherst 3pm
Women's Varsity Swimming at SMU 7pm

Friday and Saturday

Women's Varsity Basketball Tournament
Varsity Skiing JSC/SMC Carnival at Madonna/Middlebury
Varsity Track GBCAA at Harvard

Saturday

Varsity Basketball at Amherst 8pm
Varsity Fencing at Holy Cross 1pm
Women's Varsity Fencing URI & RIC at Holy Cross 1pm
Varsity Gymnastics at Coast Guard 2pm
Women's Varsity Gymnastics vs. RIC and Maine (Farmington) 2pm
Varsity Hockey vs. Bates 7pm
Men's and Women's Varsity Swimming at Trinity 2pm
Varsity Wrestling at Williams 2pm

Tuesday

Varsity Basketball vs. Nichols 8:15pm
Women's Varsity Basketball at Wellesley 7pm
Women's Varsity Fencing at Harvard 6pm
Women's Varsity Gymnastics at Boston State 6pm
Women's Varsity Swimming at Wellesley 6:30pm
Varsity Wrestling vs. UConn at WPI 6pm

Wednesday

Varsity Hockey vs. Curry College 7pm
Varsity Swimming vs. BU 6pm

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A 1 Independent		B 5		C 6		W L	
Team	W L	Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	AT&T-B	3 0	Economics	3 0		
The 'Macks'	6 2	ΦΔX Orgy	2 0	XΦ C1	3 1		
Economics	5 3	ΦX B	3 1	ΦΔX Outhouse	2 1		
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1		
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3		
Sloan 'A'	1 5	NRSA B	1 3	BOII 'C'	0 2		
Second West	1 8	ΠΔΦ 'B'	0 3	Korean Stds	0 3		
A 1 Living Group		B 6		C 7		W L	
Team	W L	Team	W L	Team	W L	Team	W L
ΔT A	6 1	Nodules	2 0	SΦ C1	3 0		
ΔT A A	6 2	KΣ 'Ball Hdlrs'	3 1	ΔT A "GRRR"	2 1		
Fiji 'A	5 3	ΦX B	2 1	Fiji	1 1		
Baker Bullets	4 3	ΦΦE B	3 2	AT 'C'	1 2		
MacGregor	2 6	Fiji B	1 2	AXA 'C'	0 2		
The Jacks	0 8	ΦΔΦ	1 2	AKEC	0 3		
A 2 Living Group		B-lievers		C 8		W L	
Team	W L	Team	W L	Team	W L	Team	W L
ΣΔE 'A'	6 0	C 1	1st E Redneck	3 0			
ΔΔA 'A'	5 2	Team	W L	Wishwekood Shute	3 0		
ΔKE 'A'	4 2	4th West	3 1	Dawg Shooters	1 1		
2001	3 4	EΦ "Snakes"	3 1	ΠΔΦ 'C'	1 1		
AEII	2 4	HoJo	3 1	EΦ	1 2		
Chocolate City	2 5	Burton 1C	2 1	ΦΔX C2	0 2		
ΠΔΦ XTC'	1 6	Sick Puppies	1 2	NRSA C	0 3		
B 1		ΦKΣ		C 9		W L	
Team	W L	Team	W L	Team	W L	Team	W L
ΦKΣ "B"	5 1	Coalition	0 3	Conner 3	4 0		
Burton Fives	4 2	C 2		Second East	2 0		
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System Dynamics	3 3	Chinese Stds	4 0	ΣΦE C2	2 1		
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Offer free Bible literature concerning our beliefs. Write Scriptures, Dept 11, P.O. Box 1257, Merritt Island, Florida 32952		Thunderbolts	4 0	D 3			
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Fencing hopes to imp

By Jeanette Wing
(Jeanette Wing '79 is a member of the MIT Women's Fencing team.)

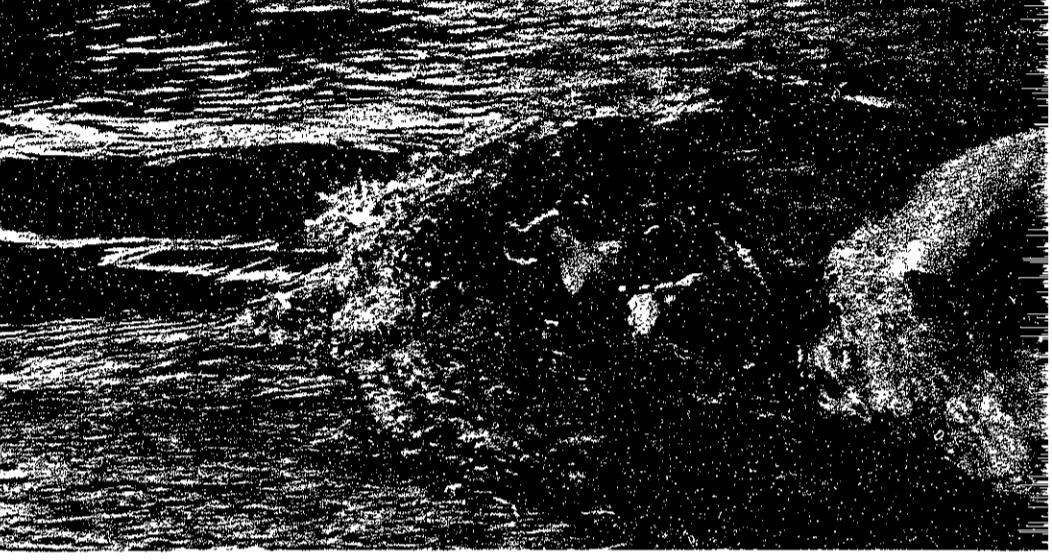
Struggling to maintain a winning record has never been a problem for the MIT Women's Varsity Fencing Team (4-3) until this year. After a 13-3 loss to rival Radcliffe temporarily halted the team's winning (2-1) record of last December, MIT routed Concord-Carlisle 12-4 on January 11 for the second time in the team's history.

Following this victory the women split last weekend's meets, with a close defeat to Dartmouth 10-6 to again tie the win-loss record, and a comeback victory against SMU 9-7 to give the team a winning edge in the season record.

Saturday, SMU's weaker women were no match for the quicker and more aggressive MIT team. Captain Michelle Prettyman '79 won all three of her bouts with fast and vicious at-

tacks that left the opposition motionless. Jeanette Wing '79 was the only one to win all three of her bouts, scoring 10-0, 10-0, and 10-0. The team's record is now 4-3.

(Please turn to page 11)

Swimming rips WPI, ULC

One of MIT's swimmers in the 500 yard freestyle during last Saturday's double dual meet against WPI and ULC. (Photo by Gordon Haff)

By Gordon Haff

Last weekend in a double dual meet, MIT dealt WPI and the University of Lowell decisive losses with scores of 73-40 and 69-43 respectively.

Coach Benedict is happy with the performance of his team. He sees a great potential for improvement in many of his swimmers. He cited the drastic improvements of two swimmers, Tom Varney '80 and George Dowd '81 in particular as an example of how he sees the team will progress in the weeks ahead. Benedict noted that "at this point in the season you begin to see the things you work on in practice begin to pay off." He added that at practices the team was now doing less distance work and more work on specialty strokes.

Diving Coach Charlie Butterfield

(Please turn to page 11)

NEW COURSE**Interracial Relationships in Contemporary American Society: Attitudes and Social Consequences**

Topics to be investigated will include:

- Arguments for and against racism from slavery to the present.
- The social psychology of institutional racism.
- Race relations at MIT.
- Strategies for solving the problem.

Persons interested in taking the course should register for SEM 212 and contact John Benedict at x3-1526 as soon as possible. Enrollment is limited. The course will be offered on Wed 3-4:30 in Room 20C-016.

ALSO OFFERED

will be Institute Seminars 211

The Role of Education in Society

SEM 211 A combination of field placements and classroom discussions will enable students to develop a better understanding of how children should be educated in a democratic society. From first-hand experience as well as from readings, the course will meet jointly with SEM 212. The opportunity for students to integrate the practical experience with a more theoretical approach.

SEM 212 This seminar is designed for students interested in investigating the social effects of education on the individual and on society. Weekly readings will include critical issues in American education.

Persons interested in these seminars should contact Steve Raudenbush or John Terry at x3-51

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A 1 Independent		B 5		C 6	
Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATQ-B	3 0	Economics	3 0
The "Macks"	6 2	ΘΔX Orgy	2 0	ΦΦ C1	3 1
Economics	5 3	ΘX B	3 1	ΘΔX Outhouse	2 1
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan A	1 5	NRSA B	1 3	ΒΘΠ "C"	0 2
Second West	1 8	ΙΙΑΦ "B"	0 3	Korean Stds.	0 3
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Hydros 2	2 2	ΑΔΦ			
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Abusers	3 2	Aero-Astro			
ΑΕΠ	2 3	Burton 5 Smokers			
LSD	1 2	B M F's I			
Chem Eng	1 3	Baker WPOD			
Burton H Toey	0 5	Roaches			

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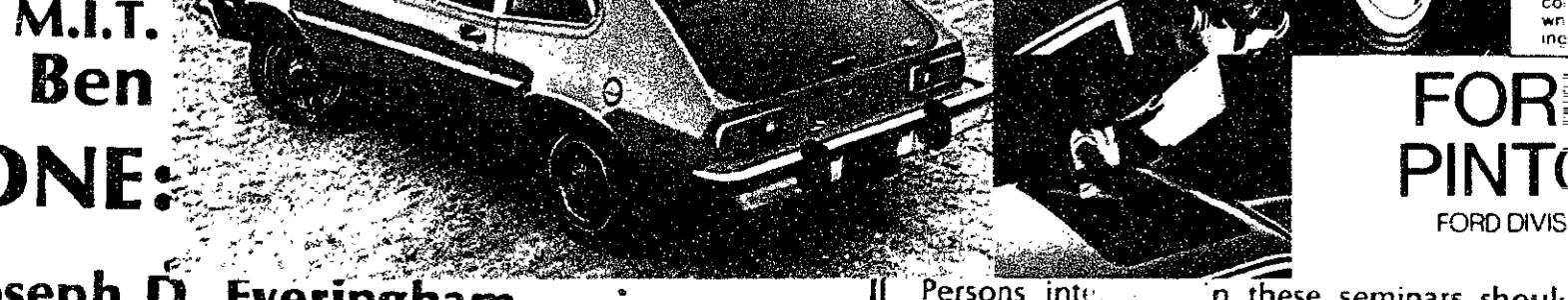
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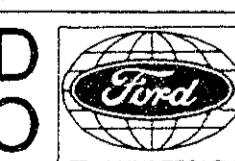
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Tactics and Strategies: An Exam Planner isn't like any study guide you've ever seen. We don't pretend to offer you definitive advice on how to study or how to psyche out your professors or how to ace an exam. We've put in our years on campus, and we know better than to spout words of wisdom that

you can never hope to follow and wouldn't even if you could.

What *Tactics and Strategies* offers is a laid-back look at the testing scene that may help you better put together your grade game plan—or offer some helpful insights you haven't before considered—or at least give you some interesting reading for an afternoon.

The articles that follow cover everything from why study formulas don't work to a creative test-taking strategy to an unorthodox introduction to paper writing. We've thrown in a new look at an old phenomena—cramming—and a consoling view of six successes who weathered academic crises. And, given the intensity

of the grade game for so many students, we give special attention to coping with test anxiety.

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Good reading!



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IM Basketball Standings

A 1 Independent		B 5		C 6	
Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATD-B	3 0	Economics	3 0
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Magical Memory

The
Unending
Quest for a
Study
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That Works

by PATRICIA WESTFALL

Thought, not memorization, is the soul of learning. Every professor says this. What teacher would claim not to be teaching students to think?

But just try and pass a test by thinking. Every student who has forgotten the year Thomas Aquinas died knows that thinking ability is not what gets tested. Memorization—dictaphone style—is the ability in question. Thinking won't derive the seven phyla or reveal the eighth wonder of the world. Only memorization counts in the crunch, and students who wish to survive had better master the skill. But how?

"Perhaps the most basic thing that can be said about human memory, after a century of research, is that unless detail is placed in a structural pattern it is rapidly forgotten," said Jerome Bruner in *Process of Education* in 1960. Bruner's concept, the importance of structure, lies in one form or another at the root of all how-to-study methods.

**In the Beginning . . .
Was SQ3R**

The first and most famous of the foolproof, try-it-you-can't-fail study formulas was Frank Robinson's SQ3R method published in 1946. The acronym stands for "Survey, Question, Read, Recite, Review." The method, still taught today in a great many college how-to-study courses, works this way. First, survey the structure of the chapter, reading paragraph headings and summaries; this helps your mind get a firm grasp of the whole assignment before you read.



Next, turn those paragraph headings into questions which must be answered by the text. Then read (the first R) to find those answers. Robinson stresses that reading must be an active process; you should be searching for answers, not just passing your eyes over the type.

Every so often (every other page, in fact) you should stop, close the book and try to recite what you have just read. This is the step that is supposed to fix the information in your memory. Finally, after you have read and recited the complete assignment, take

a few minutes to just learned be-

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Robinson's tested formula sionately by a until the studen the 1960's. That study formulas print at a rate manuals - and books. Most of on SQ3R.

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OK4R by Walter Pauk meaning Overview, Key ideas (find them he meant), Read, Recall, Reflect and Review was published in 1962. Next came Space & Berg's 1966 PQRST (Preview, Question, Read, Summarize, Test), followed by OARWET in 1968 (Overview, Ask, Read, Write, Evaluate, Test). The champion entry was the 1973 PANORAMA which stands for "Purpose (think about why you are reading your text); Adaptability (adapt your reading speed to the difficulty of the material); Need to question (an obvious and painful stretch for the acronym); Overview; Read and relate (that is, relate the main ideas to personal experience); Annotate; Memorize; and (if you still care at this point) Assess."

Walter Pauk the OK4R man finally called for an end to this acronym olympics by daring to put into print what everybody had known all along: despite proof that these formulas work, no sane student ever bothers to use one. In an article knocking PANORAMA as silly ("you're reading your text because your professor told you to"), Pauk wrote, "There is no question about the value of converting a title into a question, but I can honestly say that I have never met a single student who has ever used the technique even though he knew about the textbook system incorporating this step."

A shocking confession from a man who has been teaching how-to-study courses most of his academic career.

Student indifference hardly stifled the acrolympics, however. REAP was published in 1976. REAP was different though. REAP looked as if it might have something to do with how people actually study.

Undaunted, Our Heroes Press On

How students actually study is something few researchers have bothered to study. How one *should* study, yes, advice abounds. But *do* study? No. In 1976 Robert Szabo published a sketchy survey (not study) of practices followed by successful students on his campus. Even that survey incomplete as it was showed how far from students the acrolympics have been.

For example, most of the top students preferred studying in cycles working hard for three or four days, then goofing off entirely for the next three or four days. So much for the "study a little bit each day" platitudes vouchsafed by the formulas.

Students also preferred to work in four- and five-hour stretches, kayoing

the formula emphasis on one-hour study sessions. All the formulas stress the importance of frequent rest breaks, but good students say the breaks interrupt concentration.

Like Pauk, Szabo found no student using a formula. He found this meant students rarely remembered the main ideas in a text, remembering instead trivial details and facts. Yet, noted the rueful Szabo, "They manage to obtain acceptable grades."

Did Szabo and colleagues consider this a hint that maybe they should abandon the quest for a perfect formula? Never. Szabo concluded his article with a ringing cry to press on to new acronyms. "We must find a method that reaches students where they are," he said.

R Is for Read

REAP might be the method Szabo was calling for. Published by two University of Missouri professors, it is, first, simpler than all the others. The R stands for read. That's it. No Survey, Question, Preview or Overview. Just sit down and read. That's what students do anyway, so for the first time in a generation the first step of a formula makes sense in human terms.

The next step, E. Encode, is equally simple. Using any method you want, simply close the book and try to phrase what you've read into your own words. Section by section? Chapter by chapter? Book by book? That's your choice. The only requirement of the method is that you actively rephrase the material *immediately*. The other two steps, Annotate and Ponder (upon which the authors elaborate at length) are just refinements of Encode: write down your encoding (for later review?) and then think (think?) about it, they say.

When one examines REAP, it's not so different from earlier formulas in that it calls for an active engagement with the material to be memorized. It is different in that it throws away the hoopla and rigid rules of earlier formulas and states the meat of the matter: *Successful study requires taking time to put things in your own words immediately. Repeat, immediately.*

The Forgetting Curve

Why does study require an immediate Encoding (or Recalling or Reciting or Evaluation or Call It What You Will)? The answer to that is suggested in some classic early research on memorization, such as the 1913 nonsense syllables study by

Ebbinghaus (ah yes, the one you had to memorize for Introductory Psych, remember?). In the Ebbinghaus study, subjects studied a list of nonsense syllables and then were tested repeatedly. After 20 minutes they had forgotten 47 percent almost half. After a day, 62 percent were forgotten; two days, 69 percent; 31 days, 78 percent. The results were clear: the bulk of forgetting takes place within minutes after study and then tapers off.

A similar study by Spitzer in 1939 which used meaningful material came up with similar numbers 46 percent of the material was forgotten after a day; 79 percent after 14 days. Forgetting is an immediate thing. By tonight you will have forgotten almost 50 percent of this article unless you try to encode it or put it in your own words the minute you finish.

Spitzer proved that encoding works to counter the brain's awesome and instant forgetting power. In another study he conducted, some subjects merely studied (i.e. read) materials while others recited the information in their own words immediately after reading it. Seven days afterwards, those who had recited remembered 83 percent of what they had read. The others only remembered 33 percent. This shows that encoding works, but for the why of that working you'll have to return to Bruner's concept about structural patterns. Encoding apparently makes you create memorable patterns. It works.

Note-taking, Like Love, Requires You Listen Dearly

Assigned readings are not the only material you must commit to memory. You will also be tested on lectures. Studying lecture notes is a lot like studying a text. First you read, then you encode. But before you can read or encode you must take notes, and that requires listening.

It is a subtle skill, perhaps because it's so human a skill. Professors are not textbooks; they're humans who do not organize themselves into easy-to-grasp chapters and headings and who often talk rapidly, slowly or monotonously.

But listeners are fallible, too. They listen in monotone, racing like a dictaphone to capture every word. Most students listen to a lecture as if every idea had equal weight. Not so. In an hour-long lecture, there will be at most only six or seven main points that you are expected to remember.

The rest of the information is detail, colorful anecdotes, relevant tangents or side dressings of opinion which the

SPO

IM Basketball Standings

A 1 Independent		B 5		C 8	
Team	W L	Team	W L	Team	W L
Model's Mutants	6 2	ATO-B	3 0	Economics	3 0
The "Macks"	6 2	ΘΔX Orgy	2 0	ΧΦC1	3 1
Economics	5 3	ΘX B	3 1	ΘΔX Outhouse	2 1
Mechanical Eng.	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan 'A'	1 5	NRASA B	1 3	ΒΟΠ "C"	0 2
Second West	1 8	ΠΔΦ "B"	0 3	Korean Stds	0 3
A 1 Living Group		B 6		C 7	
Team	W L	Team	W L	Team	W L
ΔT 'A'	6 1	Nodules	2 0	ΣΦC1	3 0
ΔTΔ 'A'	6 2	KΣ "Ball. Hdrs"	3 1	ΔTΔ "GRRR"	2 1
Fiji 'A'	5 3	ΣX B	2 1	Fiji	1 1
Baker Bullets	4 3	ΦBE B	3 2	ΔT "C"	1 2
MacGregor	2 6	Fiji B	1 2	ΔXA "C"	0 2
The Bojacks	0 8	ΦΔΘ	1 2	ΔKEC	0 3
A 2 Living Group		B-lievers		B-lievers	
Team	W L	Team	W L	Team	W L
ΣAE 'A'	6 0	C 1	4 2	4th West	3 1
ΔXA "A"	5 2	Team	3 1	ΕΘ "Snakes"	3 1
ΔKE "A"	4 2	4th West	3 1	Holo	3 1
2001	3 4	ΕΘ "Snakes"	3 1	Burton 1C	2 1
AEI	2 4	Holo	3 1	Sick Puppies	1 2
Chocolate City	2 5	Burton 1C	2 1	ΦΚΣ	0 3
ΠΔΦ "XTC"	1 6	Sick Puppies	1 2	Coalition	0 3
B 1		C 1		C 2	
Team	W L	Team	W L	Team	W L
ΦΚΣ 'B'	5 1	Team	4 2	Team	5 0
Burton Fives	4 2	4th West	3 1	Les Tares	3 2
From A to B	4 2	ΕΘ "Snakes"	3 1	Vigilantes C1	3 2
Nuclear Eng.	3 3	Holo	3 1	E Prus Blue Boys	2 3
Vigilantes 'B'	2 3	Burton 1C	2 1	7W Enforcers	2 3
ΒΟΠ 'A'	1 2	Sick Puppies	1 2	XM1 Sports	0 5
IIK 'A'	1 4	ΦΚΣ	0 3		
Ashdown	1 4	Coalition	0 3		
B 2		C 2		C 3	
Team	W L	Team	W L	Team	W L
Transports	4 0	Team	4 2	Team	4 0
Chokin' Tokers I	4 2	Chinese Stds	4 0	Chinese Stds	4 0
System Dynamics	3 3	ΑΣΦ	3 1	Mallards	2 2
Hydros 2	2 2	Tetazoo	2 1	ΦΚ Celtics	2 2
ΤΔΦ 'S & D's'	2 3	B M F's II	2 2	Nudes Inc	1 3
Mac C	2 4	ΦΚ Celtics	1 2	K-Entry Killers	0 4
N House V & II	2 4	MacGregor E	1 3		
ΣAE Bouncers	1 2	Sp Inquisition	0 4		
B 3		C 4		C 5	
Team	W L	Team	W L	Team	W L
B T B	3 0	Team	4 0	Team	4 0
Hydros I	3 1	ΘΕ	4 0	Helle Macabees	2 0
ΣΦΕ 'B'	2 1	Tetazoo	2 1	Tetazoo	2 1
The Filters	2 2	B M F's II	2 2	B M F's II	2 2
Datamen	1 3	ΦΚ Celtics	1 2	Baker WPOD	0 4
Club Latino	1 3	MacGregor E	1 3	Roaches	0 4
New III Stooges	1 3	Sp Inquisition	0 4		

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Persons interested in these seminars should contact Steve Raudenbush or John Terry at x3-5126. Seats are limited. The education seminars will meet Thur 3-4:30 in Room 20C-G.

All three courses will be graded on a pass/fail basis and carry with them 12 MIT units.

Fencing hopes to improve

By Jeanette Wing

(Jeanette Wing '79 is a member of the MIT Women's Fencing team.)

Struggling to maintain a winning record has never been a problem for the MIT Women's Varsity Fencing Team (4-3) until this year. After a 13-3 loss to rival Radcliffe temporarily halted the team's winning (2-1) record of last December, MIT routed Concord-Carlisle 12-4 on January 11 for the second time in the team's

Following this victory the women split last weekend's meets, with a close defeat to Dartmouth 10-6 to again tie the win-loss record, and a comeback victory against SMU 9-7 to give the team a winning edge in the season record.

Saturday, SMU's weaker women were no match for the quicker and more aggressive MIT team. Captain Michelle Pettyman '79 won all three of her

tacks that left her motionless. Jeanette won the meet's r bout, also contributing wins, scoring most on feint-disengag Meredith Boice '79 meet off with a bout added another win round. Julia Shima ing more carefully previous two bouts tance and watched

valuable than a less better organized, rive and less likely text can't force you

Ah, But What

One autumn we turned to campus. E. B. Greene gave exams they had before. Even "A" gotten 50 percent successfully memo fore. Another proton, found that six thirds of their alg after a year.

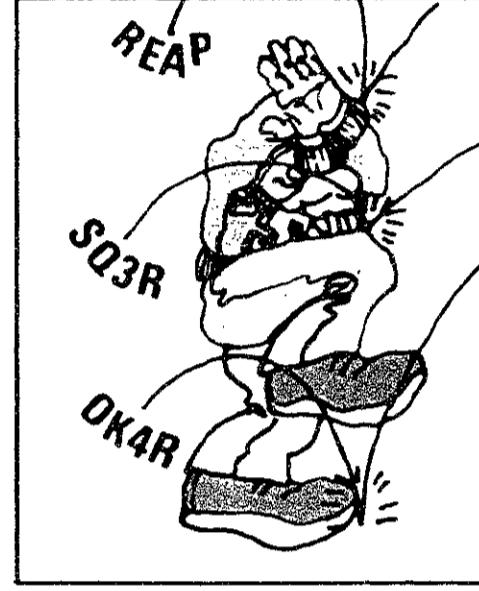
What's the use? study habits, you forget what you've get through tests, t all gone by next te dictaphone style, se a pointless exercise

In a 1932 book chology of Study, "If the student has merit, it lies in bein than a mere recordi something, he arg ability. You are o most of what you le in all this is that so it, or at worst inspi think.

Mace could do it essay was suggestt might be involved. thinkers have strugtion, and among honest might be W who has said that the thinking done largely a private n

So how is mem this private skill? that we can go all letter the not-y Aquinas wrote: "Since you have should set about t ure of knowledge, you concerning it should choose to way into the ocean little streams; so ought to be reach ones.... Do not he is said, but rather should commit to

Victor White, c letter, has written: St. Thomas is. I commit what is said is not straightw intellect to it. He swallow everything him remember it examine it, but no



outline method, a two-column format, the "Cornell three-column format" and "no special method" — revealed that none of the methods had any merit over the others. There were no differences in student grades attributable to note-taking methods.

But a study that compared students who did not take notes with those who did, revealed that note-takers always make better grades. It's not "how" but "whether" you take notes that counts. Why? None of the researchers ventured any answers, but it may be that note-taking is a form of encoding. Lectures make you select what's important (because you don't have time to get *everything* down), and they make you put the information down in your own words (because you don't have time to put it down in the professor's words). In lecture you become an encoder in spite of yourself. You're forced to do there what you should do for texts. No wonders so many students feel they learn more in lectures. A text ought to be more

Two Unlikely Learning Techniques

Teaching Others

It's true. Teachers learn more from a course than the students. If you try to teach material to someone else, you are forced to grasp it in new ways, to express it in terms the other person can understand. This helps you remember. Tests at one university had a group of students study material using the SQ3R method. Another group also used the SQ3R method but was required to teach the material to other students. The student teachers did significantly better on tests than the control group. The catch in this technique is finding a "student" who is willing to learn biology or psychology or economics from you. But if you can talk someone into being your student,

you may learn more than you ever have before.

Mapping

Some people are just visually minded, so transforming a text or lecture into a picture or "map" might be the best way for these people to learn. To draw a map, put down the key idea first. This becomes the "buried treasure" on your map. Then draw in secondary or supporting ideas around the buried treasure. Lastly, draw in the critical details. Why this works is that you have to *find* the secondary and supporting ideas before you can draw them. In doing that you learn them. Mapping, as its author, M. Buckley Hanf, says, "is thinking." And the best way to learn mapping is to do it.

6 INSIDER

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ture because it's more comprehen- to mumble. Yet a to encode.

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Even with the best i will eventually learned. You will but what of it if it's rm? Memorizing, ems to all students

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orization related to For an insight into the way back to a Saint Thomas a Brother John: asked me how one to acquire the treas- this is my advice to : namely, that you enter, not straight- but by way of the or difficult things ed by way of easy ed by whom a thing r what is said you your memory. . . . " ommenting on this "Note how careful Brother John is to d to his memory; he ay to commit his is not at once to ng that is said; let in order to test and tax once to assent to

it. Suspension of judgment is one of the first things a learner has to learn: we have to learn how to entertain ideas without promptly either affirming them or denying them. Here again it is a matter of that difficult business of restraining the mind's own native impetuosity, the natural desire of the reason to be unreasonable. We want to jump to conclusions before we have reached them; to take sides, make a stand, vehemently affirm or deny

before we have considered, examined, tested, proved."

St. Thomas Died in 1274

Memorization may seem more worthwhile to you if you perceive it, like Victor White does, as a tool of dispassion. Memorization is not commitment. It's just a way to hold onto thoughts as you sift through sometimes frightening new ideas looking

for the ones you will come to live by. Remember that—even if you can't remember when St. Thomas died. Meanwhile, you can be sure researchers will press on, looking for a memorizing formula you can live with.

Patricia Westfall, a contributing editor for Insider, spends snowed-in Iowa winters searching for the ultimate in study methods.

To Each His Own Study Method: Four Scholars Describe Theirs



No Time for Calculation

Chemical engineering senior Devon Clausing does everything she can to save time when studying for her classes at University of Cincinnati.

The president of one engineering club and active in two others, Clausing is forced to use what little study time she has very efficiently in order to maintain her 3.7 grade average.

"My freshman year I did all my homework every night," she said. "As I got more involved in activities, I didn't have time to do all of it. That's when I started finding shortcuts."

Most of an engineer's study time is spent working problems, she said. To save time, Clausing sets up the equations to solve the problems and makes sure she understands them, but she stops short of doing the actual calculations.

For non-engineering courses, Clausing will read assigned material before a class only if she expects the teacher to call on her for an answer. Otherwise, she prefers to read the material as time permits after the professor has lectured on it.

Clausing keeps books for non-engineering classes in the bathroom "by the john," and is "able to keep up pretty well that way."



Ready, Set, Write

For most students, writing papers at the last minute is a final act of desperation. For Katherine Donnelly, University of Chicago sophomore, it's just good strategy—one that produces "A" work.

When Donnelly has a paper to write, she reads over the relevant material two or three times and thinks deeply about her topic. Then she waits.

The night before the paper is due, Donnelly arranges her notes and books on an isolated library desk and sits down to write. The words pour out quickly and steadily, racing against the clock. When the frenzy subsides, Donnelly proofreads the paper she's created and tosses it into a folder, to be turned in the next day.

The California native says the best papers she's written have been produced in a last-minute flurry of activity.

One epic effort—a comparison of the themes of freedom and authority in *King Lear*, Kant, *Paradise Lost*, *The Federalist Papers* and Plato—was written in a fast four hours.

The last-minute papers almost always earn "A's," says Donnelly. Papers she writes over a long time period come

out sounding stilted and usually receive "B's." "When I'm under pressure to do it and I'm tired, I just say exactly what I want to say and get it over with," she says. "You don't have time to overthink."

Although her last-minute method has proven itself over and over again, Donnelly—a very conscientious student—has reservations about using it:

"I don't always trust it. Something inside me says, 'Don't leave it until the last minute.'"



Booking It

Roberta Rusch, a senior at St. John's College, won't have any tests this year, but she often spends six hours a day studying in the library—for the fun of it.

This self-motivation is typical of students at the small school in Annapolis, Maryland. The demanding St. John's curriculum emphasizes traditional liberal arts, such as grammar, logic and rhetoric. The reading list includes most of the "great books" of Western tradition.

There are no tests at St. John's, but grades based on papers, homework and class participation are recorded on each student's transcript. More important than grades, however, is the "don rag"—an annual oral evaluation of each student's progress.

Without the threat of impending exams, St. John's students must discipline themselves to study regularly, says Rusch.

"You've got to form habits. Once you're into the habit of regular study, it becomes a part of you," she adds. "I think basically people here like to study. We're interested in the books."



In the Swim

Yale University senior Dan Ortiz finds that swimming every day helps him study better.

"Keeping in shape and having that mental relaxation is good," he said. "It gives my mind an hour or so to rest."

"If I don't swim I start feeling heavy and fatigued. I begin fading out around 10 o'clock."

Ortiz, an English major whose grades earned him entry into Phi Beta Kappa honorary society, tries to break his study time into two- or three-hour blocks. He says he can't concentrate much longer than that. He also enjoys changes of scenery when he studies.

For writing, which he finds difficult, Ortiz holes up in a rather sterile engineering library. He doesn't know many engineers, so he's not distracted by friends interrupting.

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IM Basketball Standings

A 1 Independent		B 5		C 6		Team	
Team	W L	Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATΩ-B	3 0	Economics	3 0		
The "Macks"	6 2	ΘΔX Orgy	2 0	XΦ C1	3 1		
Economics	5 3	ΘX B	3 1	ΘΔX Outhouse	2 1		
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1		
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3		
Sloan 'A	1 5	NRSA B	1 3	BΩ II "C"	0 2		
Second West	1 8	ΠΔΦ "B"	0 3	Korean Stds.	0 3		
A 1 Living Group		B 6		C 7		Team	
Team	W L	Team	W L	Team	W L	Team	W L
ΣΤΔ A	5 1	Nodules	2 0	ΣΔC	3 0		
ΣΤΔ A	5 2	KΣ Ball. Hdlrs	3 1	ΣΦΕC1	2 0		
Fiji 'A	5 3	ΣX B	2 1	ΣΔΔ "GRRR"	2 1		
Baker Bullets	4 3	ΦΒΕ B	3 2	Fiji	1 1		
MacGregor	2 6	ΦΔΦ	1 2	ΣΔ "C"	1 2		
The Bojacks	0 8	ΦΔΦ	1 2	ΣΔΔ "C"	0 2		
A 2 Living Group		B-leavers		ΣΔC		ΣΔC	
Team	W L	Team	W L	Team	W L	Team	W L
ΣΔΕ "A"	6 0	C 1	W L				
ΔΔΔ "A"	5 2	Team	3 1				
ΔΚΕ "A"	4 2	4th West	3 1				
2001	3 4	EΦ "Snakes"	3 1				
ΑΕΠ	2 4	HoJo	3 1				
Chocolate City	2 5	Burton 1C	2 1				
ΠΔΦ "XTC"	1 6	Sick Puppies	1 2				
B 1		Coalition		ΦΚΣ		ΦΚΣ	
Team	W L	Team	W L	Team	W L	Team	W L
ΦΚΣ "B"	5 1	C 2	W L				
Burton Fives	4 2	Team	3 1				
From A to B	4 2	Air Force ROTC	5 0				
Nuclear Eng	3 3	Les Tares	3 2				
Vigilantes "B"	2 3	Vigilantes C1	3 2				
BGII "A"	1 2	E Prus. Blue Boys	2 3				
IIKA	1 4	7W Enforcers	2 3				
Ashdown	1 4	XMI Sports	0 5				
B 2		C 3		C 4		C 5	
Team	W L	Team	W L	Team	W L	Team	W L
Transports	4 0	Team	W L	Team	W L	Team	W L
Chokin Tokers I	4 2	Chinese Stds	4 0	Team	W L	Team	W L
System Dynamics	3 3	ΔΔΦ	3 1	Team	W L	Team	W L
Hydros 2	2 2	Mallards	2 2	Team	W L	Team	W L
ΤΕΦ "S & D's	2 3	ΘX C	2 2	Team	W L	Team	W L
Mac C	2 4	Nudes Inc	1 3	Team	W L	Team	W L
N House V & II	2 4	K-Entry Killers	0 4	Team	W L	Team	W L
B 3		C 6		C 7		C 8	
Team	W L	Team	W L	Team	W L	Team	W L
B7B	3 0	Team	W L	Team	W L	Team	W L
Hydros I	3 1	ΘΣ	4 0	Team	W L	Team	W L
ΣΦΕ "B"	2 1	Hillel Macabees	2 0	Team	W L	Team	W L
The Filters	2 2	Tetazzo	2 1	Team	W L	Team	W L
Dataman	1 3	B M F's II	2 2	Team	W L	Team	W L
Club Latino	1 3	ΦΚ Celtics	1 2	Team	W L	Team	W L
New III Stooges	1 3	MacGregor E	1 3	Team	W L	Team	W L
Sp Inquisition	0 4	Sp Inquisition	0 4	Team	W L	Team	W L
B 4		C 9		C 10		C 11	
Team	W L	Team	W L	Team	W L	Team	W L
ΣΔΕ B1	4 0	Team	W L	Team	W L	Team	W L
Did We Play	3 1	Thunderbolts	4 0	Team	W L	Team	W L
Sloan B	3 1	Tri City Tycoons	4 1	Team	W L	Team	W L
Abusers	3 2	Aero-Astro	4 2	Team	W L	Team	W L
ΑΕΙΙ	2 3	Burton 5 Smokers	2 2	Team	W L	Team	W L
LSD	1 2	B M F's I	2 3	Team	W L	Team	W L
Chem Eng	1 3	Baker WPOD	0 4	Team	W L	Team	W L
Burton H. Toeey	0 5	Roaches	0 4	Team	W L	Team	W L

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Reservations: 253-4720**

Fencing hopes to improve

By Jeanette Wing

(Jeanette Wing '79 is a member of the MIT Women's Fencing team.)

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Persons interested in these seminars should call Steve Raudenbush or John Terry at x3-5126. Opportunities are limited. The education seminars will meet on Thur 3-4:30 in Room 20C-G-6.

All three courses will be graded on a pass/fail basis. Participants will carry with them 12 MIT units.

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A Compendium of Study Aids & Advice

by VICKI DENNIS

Grades are not necessarily synonymous with intelligence. Often the best students are the ones who have learned the tricks of the trade. Here are six study tips that could make the difference for you.

Use the Necessary Tools

Any tradesman needs special tools, and the college student is no different. The first tool is a

Get Acquainted with the Library

Don't wait till you have a big project to learn how to use the library. For starters, find out how the card catalog works. It consists of small wooden drawers full of alphabetical listings of all the library's holdings—arranged by author, title and subject headings. In the upper left-hand corner of each card, you'll find the "call number," which tells you the location of the book in the library. You should also become familiar with the reference room where encyclopedias and other general reference materials are located, including *The Reader's Guide to Periodical Literature*, a multivolume listing of magazine articles grouped by subject indexes on subjects such as

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Learn from Your Midterms

If you're alert, what you learn from a midterm can help you through the rest of the term and the final. For instance, the midterm lets you know what kinds of questions—and answers—the instructor prefers. Armed with this information, you can more easily isolate what you should learn for the final. In addition, a midterm lets you double-check your own study habits and note-taking skills. If you missed important points or found your notes impossible to comprehend, you can fine-tune your study technique or note-taking for the rest of the course. Finally, the midterm can tell you a lot about your test-taking skills. Did you run out of time? Were you calm or frantic? Were you able to organize your thoughts? Analyze your strong and weak points and work to improve your test performance before the final.

Check Out These Self-Help Study Guides

- *Study Tips: How To Study Effectively and Get Better Grades*. William H. Armstrong. (Woodbury, New York: Barron's Educational Series, Inc., 1975) \$2.25. A guide to organizing your study time.
- *Surviving the Undergraduate Jungle: The Student's Guide to Good Grades*. Kathy Crafts and Brenda Hauther. (New York: Grove Press, 1976) \$3.95. Teaches freshmen the art of collegiate self-defense.
- *How To Succeed in College: A Student Guidebook*. Joshua R. Gerow and R. Douglas Loring. (New York: Charles Scribner's Sons, 1975) \$4.95. A collection of advice and suggestions compiled by two college counselors after years of listening to students' complaints and problems.
- *Good Memory—Successful Student! A Guide To Remembering What You Learn*. Harry Lorayne. (New York: Stein and Day, 1976) \$1.95. Written by a well-known expert in memory techniques.
- *How To Take Tests*. Jason Millman and Walter Pauk. (New York: McGraw-Hill, 1969) \$2.95. Written by two nationally known authorities on tests and test-taking.
- *30 Ways To Improve Your Grades*. Harry Shaw. (New York: McGraw-Hill, 1969) \$3.95. All the way from "Uncovering Your Attitudes" to "Improve Your Test-Taking Methods."

Vicki Dennis collected study tips (and index cards) during graduate school.

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IM Basketball Standings

A 1 Independent		B 5		C 6		Team	
Team	W L	Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATQ-B	3 0	Economics	3 0		
The 'Macks'	6 2	ΩX Orgy	2 0	ΧΦC1	3 1		
Economics	5 3	ΩX B	3 1	ΩΔX Outhouse	2 1		
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1		
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3		
Sloan A	1 5	NRSA B	1 3	BOII "C"	0 2		
Second West	1 8	ΠΙΦ "B"	0 3	Korean Stds	0 3		
A 1 Living Group		B 6		C 7		Team	
Team	W L	Team	W L	Team	W L	Team	W L
ΔT "A"	6 1	Nodules	2 0	ΣXC	3 0		
ΔT "A"	6 2	ΚΣ "Bali Hdlrs	3 1	ΣΦΕC1	2 0		
FII "A"	5 3	ΣX B	2 1	ΔT "GRRR"	2 1		
Baker Bullets	4 3	ΦΒΕ B	3 2	FII "C"	1 1		
MacGregor	2 6	ΦΔΦ	1 2	ΔXΑ "C"	1 2		
The Bojacks	0 8	B-lievers	1 2	ΔKΕC	0 2		
A 2 Living Group		C 8		Team		Team	
Team	W L	Team	W L	Team	W L	Team	W L
ΣAE "A"	6 0	C 1	1 1				
ΔXA "A"	5 2	Team	W L				
ΔKE "A"	4 2	4th West	3 1				
2001	3 4	ΕΘ "Snakes	3 1				
AEP	2 4	HoJo	3 1				
Chocolate City	2 5	Burton 1C	2 1				
ΠΙΦ "XTC"	1 6	Sick Puppies	1 2				
B 1		ΦΚΣ	0 3				
Team	W L	Coalition	0 3				
ΦΚΣ "B"	5 1						
Burton Fives	4 2	C 2					
From A to B	4 2	Team	W L				
Nuclear Eng	3 3	Air Force ROTC	5 0				
Vigilantes B	2 3	Les Tares	3 2				
BOII A	1 2	Vigilantes C1	3 2				
JKA	1 4	E. Prus. Blue Boys	2 3				
Ashdown	1 4	7W Enforcers	2 3				
B 2		XM1 Sports	0 5				
Team	W L						
Transports	4 0	C 3					
Chokin Tokers I	4 2	Team	W L				
System Dynamics	3 3	Chinese Stds	4 0				
Hydros 2	2 2	ΑΔΦ	3 1				
ΤΗΦ "S & D's"	2 3	Mallards	2 2				
Mac C	2 4	ΩX C	2 2				
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Σ VE Bouncers	1 2	K-Entry Killers	0 4				
B 3							
Team	W L	C 4					
B T B	3 0	Team	W L				
Hydros I	3 1	ΩΣ	4 0				
ΣΦΕ "B"	2 1	Hillel Macabees	2 0				
The Filters	2 2	Tetazoo	2 1				
Datamen	1 3	B M F's II	2 2				
Club Latino	1 3	ΦΚ Celtics	1 2				
New III Stooges	1 3	MacGregor E	1 3				
Sp Inquisition	0 4	Sp Inquisition	0 4				

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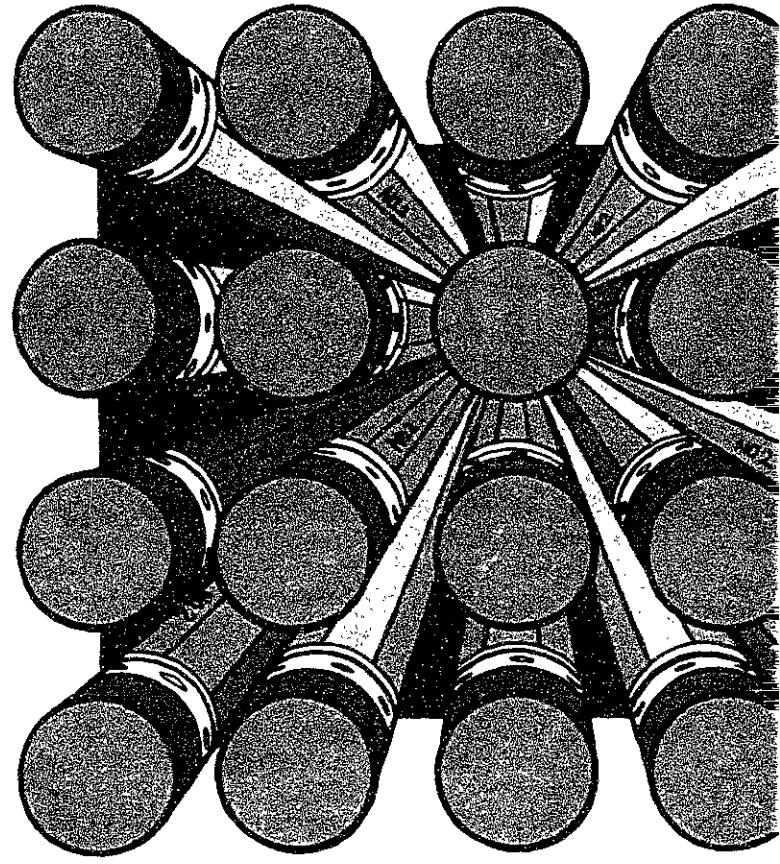
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How To Play the Test Game—and Win

by DON EASTMAN



In his keynote address to the delegates at the annual meeting of the American Council of Education last summer, Ernest Boyer, the U.S. Commissioner of Education, related how his five-year-old son had become testwise.

The boy had been attending kindergarten less than a week when, instead of saying his nightly prayers, he launched into a recitation of the alphabet. "I realized the educational implications of this recitation," said Boyer, "and was filled with fatherly pride at my son's accomplishment."

Embarrassed by his father's praise for learning the alphabet in less than a week in kindergarten, the boy confessed, "I actually learned it on *Sesame Street*, but my teacher thinks she taught it to me."

"Ah, then I was doubly proud," said Boyer, "for he had not only learned the alphabet, but he had learned the system as well."

Like most educators, Boyer understands that American education consists of two distinct parts: there is learning, and there is the game of learning.

No one is quite sure whether testing and grading, which occupy a remarkable portion of time and energy in the American educational system, measure learning—or simply the ability of students to make grades and pass tests. It is clear, however, that students who know how to play the game of education—that is, who know how to take tests and make good grades—quickly achieve a favored status in our society. The testwise

student knows and uses the rules of the game; whether he is actually learned or not, he is the declared winner in the educational sweepstakes.

The first matter to consider, and to come to terms with, is the quite obvious fact that formal education is

American education consists of two distinct parts: there is learning, and there is the game of learning.

not a monolithic, unified, univocal experience, but a series of courses taught by individuals. The act of taking a course is quite similar, for good historical and psychological reasons, to a brief apprenticeship. What one is asked to do in taking a course is to see the particular subject matter through the eyes of the instructor. You may have, or may develop, additional perspectives as well, but what the course is about, and what you will be graded on, is your ability to see the subject matter from the instructor's perspective.

Once this notion is understood, we can forget all those silly arguments about how five different English teachers will grade the same theme in five different ways, which is supposed to be an argument against the validity of testing and grading. Of course they are all different: nobody knows what

the truth is. All a English teachers (teachers), has to go is, a single, limited, of what the truth like grades and test individual matter.

Obviously, the particularly high depends upon the goodly number of ticeships. Each apes a different pe from a different ar the student is luck industrious, is what called the ability t and see it whole."

The first rule of is: *Identify the p instructor.* What and the key appro according to Profes thing you can to opective: look up fraternity house; c the University Cen dents who have before and grill the instructor for cop "just for practice" structor repeatedly possible about what be given and what will be covered. You attend class from ti up organizational

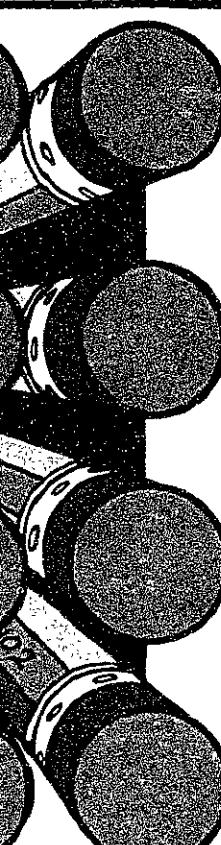
Having determined as possible the kind given, you are ready Number Two: *Me answers in advance.*

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When the test is to

be short answer, multiple choice, fill-in-the-blanks, true-false or "machine graded," concentrate on developing thematically arranged lists of the bits and pieces of the subject on which such tests depend. If the test will consist of problem-solving questions, devise representative hypothetical problems and prepare model solutions. If the test is an essay in form,

What you will be graded on is your ability to see the subject matter from the instructor's perspective.

prepare sample essays on an appropriate variety of the topics to be tested and drill yourself on the important points and illustrations for each.

The key to these exercises is practice, practice, practice. You want to take aim on a test the way the football team prepares for a game: run the plays you think will work until they become almost automatic. Then, when the time comes, use what you've practiced if at all possible. Particularly in the case of essay tests, it is frequently possible to revise or redirect the question to fit the answer you came prepared to write. If you have prepared an adequate sample of answers to a reasonable guess about what the questions will be, it is more than likely that many of those answers, with their finely tuned arguments, comparisons, illustrations, observations and conclusions, can be employed to advantage.

While you're at it, try a team approach. Though some amount of individual reading and study is unavoidable, frequently the most productive way to prepare is to form a team with one or two other students in the class. The team approach not only provides a division of labor for writing sample essays or making lists of key facts, dates or formulae, it also prevents you from becoming locked inside your own head and requires the kind of objective expression and discussion that the test will require later. Frequently, students who study alone develop a deceptive kind of inner monologue: they hear the material in their head, think they know it, but come test time they are unable to verbalize it.

The team study approach can offer a way out of the box of solipsism (particularly when employed during the entire course) and is perhaps the surest way to respond to Rule Number Three of the test game: *Don't fool*

yourself about what you do and don't know. The opportunity to discuss and criticize the sample answers is an excellent way to assess your grasp of the subject matter.

Rule Number Four is a corollary to Number Three: *Know what you can and cannot say about a subject in a given period of time.* (Obviously, this rule applies primarily to essay and discussion tests.) How many paragraphs can you write in 10 minutes, 30 minutes, and 60 minutes? Essay answers consist of an opening paragraph to state the problem (as you think it ought to be stated), a concluding paragraph to display how you have dealt with the problem in a significant way, and a variable number of intermediate paragraphs depending on the time allotted and your own particular writing speed. Again, a little practice with sample essays will tell you a lot.

Once the test itself has begun, most of the rules of the test game are common sense:

Rule Five: *Read the directions and test questions very carefully.* Make sure you understand the kinds of answers expected, and how they will be scored. Ask the examiner for help when you do not understand the directions.

Rule Six: *Budget your time.* Always take a watch to the test so you can periodically check to make sure you are working rapidly enough to answer all the questions. Try to save a few minutes to review your answers at the end of the test—so you can make corrections and add details. Remember that most tests attempt to evaluate not only your knowledge of the subject matter, but also your ability to organize that knowledge quickly and efficiently.

Rule Seven: *Answer the "easy" questions first.* If you go through the entire test answering those questions for which you are best prepared, you may be able to budget more time for the questions which will require more reflection and labor.

Rule Eight: *Answer every question.* You should attempt at least a partial answer even to those questions which draw a blank (except in the case of some machine-scored tests which penalize "guesses").

Many students give up too soon on questions which do not elicit an immediate response. Reread the question with care, and wait (briefly) for something to come. Visualize the place where you studied for this test: frequently you can find a clue stuck on the wall above your desk, or recall an irrelevant image that will provoke a more useful thought or impression.

Rule Nine: *There is a difference between a correct answer and a best answer.* It is on this difference that many multiple choice questions depend (e.g., D. H. Lawrence was (a) a poet (b) a novelist (c) a sex fiend (d) the British author of *Sons and Lovers*, *Women in Love* and *Lady Chatterley's Lover*), but essay tests also exploit this distinction to discriminate between varying levels of comprehension (e.g., "What were Monet's primary contributions to Impressionism?").

Take care to select the best answer from those which are available.

Rule 10: *Write legibly and clearly.* There is no truth to the widespread rumor that graders give the student the benefit of the doubt on answers they cannot read. Answers should be double-spaced, with wide margins, and should employ the most concise, straightforward syntax possible.

The last two rules are less obvious than the others, but no less important:

Rule 11: *The proper response to a test is not a mechanical reissuing of information, but a performance.* Many students regard tests as cruel and unusual punishment to be endured as stoically and passively as possible, or as a kind of machine-like exercise in which they are required to regurgitate (the image illustrates the attitude) in a routine fashion the same material the teacher recited to them.

It is almost impossible to perform well on tests with such an attitude. A negative or, at best, neutral approach is inherently self-defeating.

The test must be viewed as a performance in which knowledge (the subject matter) is shaped according to demand (the test questions) and necessity (the time limits).

View yourself as a performer who is ready and willing to display your wares, to argue vehemently and passionately, to match wits with the test,

Take a lesson from the football team: practice the plays you think will work until they become automatic.

and to take on all comers. This is essential for three reasons: it will sustain your efforts to prepare adequately; it will provide you with persistence and energy to assemble an answer to a difficult test question that you didn't anticipate; and it will kindle the alertness and determination needed to do your best.

continued on page 14

sports

IM Basketball Standings

A 1 Independent		B 5		C 8	
Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATD-B	3 0	Economics	3 0
The "Macks"	6 2	ΘΔX Orgy	2 0	ΧΦ C1	3 1
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Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan "A"	1 5	NRSA B	1 3	ΒΘΠ "C"	0 2
Second West	1 8	ΠΑΦ "B"	0 3	Korean Stds.	0 3
A 1 Living Group		B 6		C 7	
Team	W L	Team	W L	Team	W L
ΔT "A"	6 1	Nodules	2 0	ΣX C	3 0
ΔT "A"	6 2	KΣ Ball. Hdlrs.	3 1	ΣΦΕ C1	2 0
Fiji "A"	5 3	ΣX B	2 1	ΔTΔ "GRRR"	2 1
Baker Bullets	4 3	ΦΒΕ B	3 2	Fiji	1 1
MacGregor	2 6	Fiji B	1 2	ΔT "C"	1 2
The Bojacks	0 8	ΦΔΦ	1 2	ΔXΑ "C"	0 2
		B-levers	0 4	ΔΚΕ C	0 3
A 2 Living Group		C 8		T	
Team	W L	Team	W L	Team	W L
ΣAE "A"	6 0	C 1	1		
ΔXA "A"	5 2	Team	W L	V	
ΔKE "A"	4 2	4th West	3 1	D	
2001	3 4	ΕΘ "Snakes"	3 1	E	
ΑΕΠ	2 4	Hojo	3 1	Θ	
Chocolate City	2 5	Burton 1C	2 1	N	
ΠΔΦ "XTC"	1 6	Sick Puppies	1 2	C	
B 1		ΦΚΣ	0 3	T	
Team	W L	Coalition	0 3	G	
ΦΚΣ "B"	5 1				
Burton Fives	4 2	C 2			
From A to B	4 2	Team	W L		
Nuclear Eng	3 3	Air Force ROTC	5 0		
Vigilantes "B"	2 3	Les Tares	3 2		
ΒΟΠ "A"	1 2	Vigilantes C1	3 2		
ΙΙΚΑ	1 4	E. Prus. Blue Boys	2 3		
Ashdown	1 4	7W Enforcers	2 3		
		XM1 Sports	0 5		
B 2					
Team	W L	C 3			
Transports	4 0	Team	W L		
Chokin' Tokers I	4 2	Chinese Stds	4 0		
System Dynamics	3 3	ΑΔΦ	3 1		
Hydros 2	2 2	Mallards	2 2		
Tf. Φ S & D's	2 3	ΗΧ C	2 2		
Mac C	2 4	Tetazoo	2 1		
N House V & II	2 4	B M F's II	2 2		
ΣΑΕ Bouncers	1 2	ΦΚ Celtics	1 2		
B 3		MacGregor E	1 3		
Team	W L	Sp Inquisition	0 4		
B T 8	3 0				
Hydros I	3 1				
ΣΦΕ "B"	2 1				
The Filters	2 2				
Datamen	1 3				
Club Latino	1 3				
New III Stooges	1 3				
B 4					
Team	W L	C 5			
ΣΑΕ B1	4 0	Team	W L		
Did We Play	3 1	Thunderbolts	4 0		
Sloan B	3 1	Tn City Tycoons	4 1		
Abusers	3 2	Aero-Astro	4 2		
ΑΕΙI	2 3	Burton 5 Smokers	2 2		
LSD	1 2	B M F's I	2 3		
Chem Eng	1 3	Baker WPOD	0 4		
Burton H. Toeey	0 5	Roaches	0 4		

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By Jeanette Wing
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sets by
William Fregosi

costumes by
Cecilia Eller

lighting by
Edward Darna

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Fri & Sat, Feb 10 & 11; Thurs, Fri, & Sat, Feb 16, 17, & 18
at 8 PM

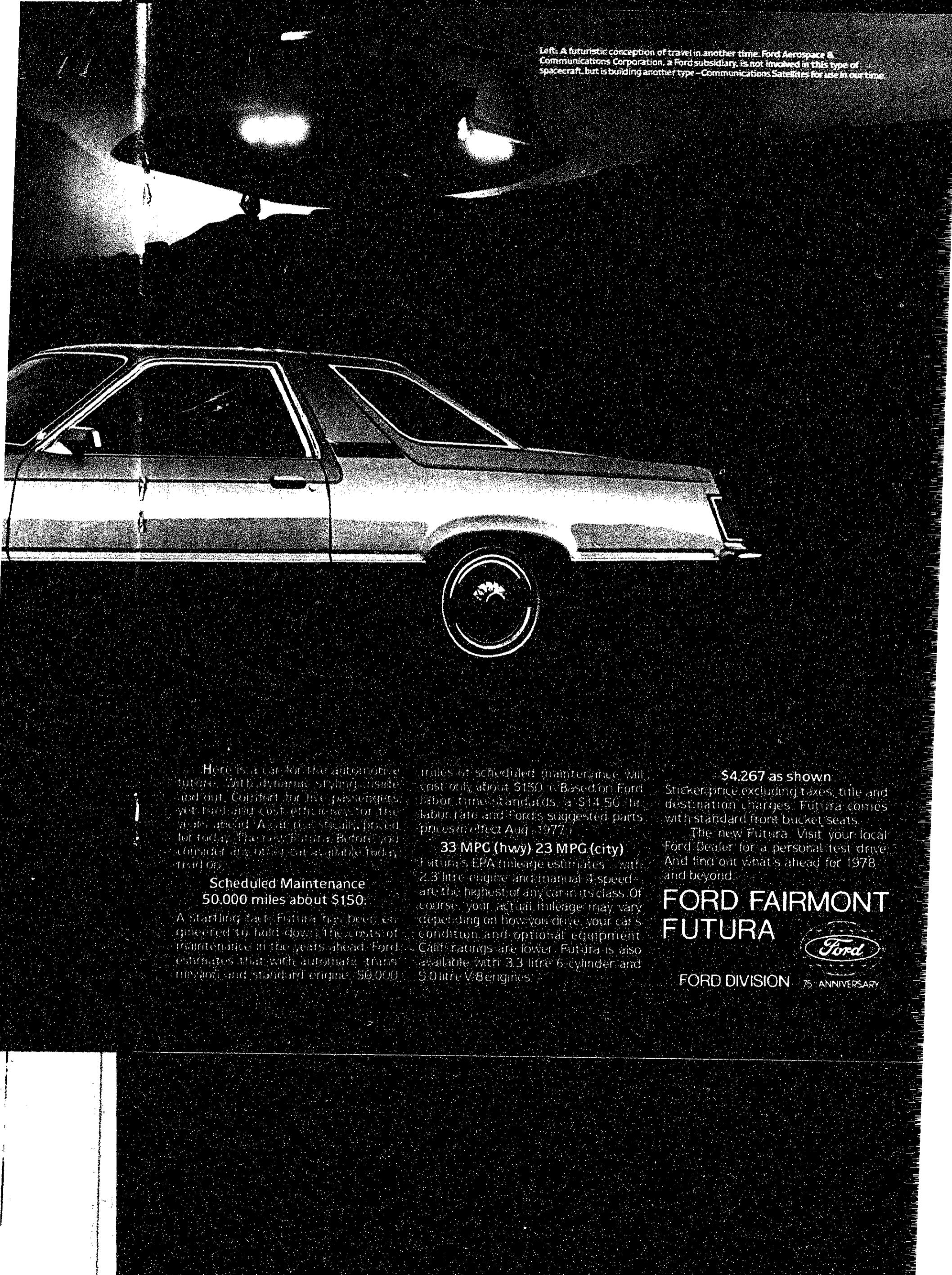
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Left: A futuristic conception of travel in another time. Ford Aerospace & Communications Corporation, a Ford subsidiary, is not involved in this type of spacecraft, but is building another type - Communications Satellites for use in our time.

Here is a car for the automotive future. With dynamic styling inside and out. Comfort for five passengers. Very fuel and cost efficient for the miles ahead. And, realistically, priced for today. The new Futura. Before you consider any other car, take today's road.

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Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATQ-B	3 0	Economics	3 0
The Macks	6 2	ΘΔX Orgy	2 0	ΘΔX C1	3 1
Economics	5 3	ΘΔX 8	3 1	ΘΔX Outhouse	2 1
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Bali Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan A	1 5	NRSA B	1 3	BOΠ C	0 2
Second West	1 8	ΠΔΦ B	0 3	Korean Stds.	0 3
A 1 Living Group		B 6		C 7	
Team	W L	Team	W L	Team	W L
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ΔTΔ A	6 2	Nodules	3 1	ΔTΔ "GRRR"	2 1
Fif A	5 3	KΣ Ball. Hdrs	2 1	Fif	1 1
Baker Bullets	4 3	ΣX B	3 2	ΔT C	1 2
MacGregor	2 6	ΦΒΕ B	1 2	ΔX A C	0 2
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Club Latino	1 3	ΦΚ Celtics	1 2	Bas	1 1
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Did We Play	3 1	Thunderbolts	4 0	Tea	1 1
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Fencing hopes to improve

By Jeanette Wing

(Jeanette Wing '79 is a member of
the MIT Women's Fencing team.)

Struggling to maintain a winning
record has never been a problem for the MIT Women's
Varsity Fencing Team (4-3) until
this year. After a 13-3 loss to rival
Radcliffe temporarily halted the
team's winning (2-1) record of last
December, MIT routed Concord-Carlisle
12-4 on January 11 for the second time in the team's

Following this victory the
women split last weekend's meets,
with a close defeat to Dartmouth
10-6 to again tie the win-loss
record, and a comeback victory
against SMU 9-7 to give the team a
winning edge in the season record.

Saturday, SMU's weaker
women were no match for the
quicker and more aggressive MIT
team. Captain Michelle Pret-
tyman '79 won all three of her

tacks that left her opponent
motionless. Jeanette Wing '79 won
the meet's ninth bout, also contributing
two wins, scoring most of her
on feint-disengage a
Meredith Boice '78 star
met off with a bout win
added another win in the
round. Julia Shimaoka '79
was more carefully than
previous two bouts, kept
tance and watched for the

continued from page 11

The logic and psychology of this
rule are simple: students who view
tests as punishment, and those who
view tests as performances, each get
what they are looking for.

Rule 12 is a relatively new one:
When shafted, appeal. Unfortunately,
many professors are like St. Augustine, who prayed, "For so it is, O
Lord my God, I measure it; but what it
is I measure, I do not know." There is

Demonstration. In lab courses, you may be expected to show the instructor that
you can perform certain basic operations, such as preparing a microscope slide. The
only way to study for this is to practice the operation regularly in class until you're
certain you are doing it correctly.

Essay. The first thing to do on an essay exam is to read each question carefully—
watching for words like *explain, compare, describe, analyze, contrast*—and be sure
you understand what you're being asked to do. If the question says to *compare* two
items, it won't do to simply *describe* them. Then work your way from the easiest
questions to the hardest questions, being careful to think through each answer before
you write it. An effective technique is to use as many specific names and references as
you can. If the professor gives your answer only a surface reading, these buzz words
may make your answers seem that much more credible. If you run out of time, write
outline answers.

Fill-in-the-Blank. Sometimes called "completion" exams, such tests require you
to provide the correct word or phrase that completes the statement. One way to study
for this type of test is to organize the material into definitive statements as you go.

Identification. You usually find such tests in the lab sections of science courses.
You're shown a collection of specimens which you have to identify and provide
information about. The way to prepare is to memorize several distinguishing
characteristics for each item. Another type of identification test provides the name of
a person or place and asks you to supply as many facts about that person or place as
you can.

Matching. The task here is to associate an item on one list with its complement on
another list—for instance, matching people's names with their accomplishments,
words with definitions and the like. Obviously, you should first match the items you
are most sure of and then, unless there's a penalty for guessing, match the remaining
items through the process of elimination. Check the instructions before you start:
can any of the "answers" be used more than once?

Multiple Choice. Theoretically such tests should be easy because the answer is one
of the alternatives and through elimination you should be able to figure out which
one. A common mistake people make is to choose the first statement that seems right
without reading the rest—the object of many such tests is to choose the best answer
from more than one correct statement.

Open Book. Most open book exams are reconstructed in such a way that you cannot
readily find the answer in the textbook. For example, you may be told to analyze the
facts or interpret them in some way. Nonetheless, the book can help you recall buzz
words and phrases.

Oral Exams. These are probably the hardest of all exams because most people are
better at padding their writing than their speech. Do not attempt to bluff your way
through a question you're not prepared to answer. Instead, when a question is asked,
consider for a moment what you can talk about with some assurance and then
proceed with such enthusiasm that the professor is reluctant to redirect you.

Problem Solving. The best way to study for such exams is to work practice
problems until you are confident that you understand how to work the formula in all
cases. When you finish each problem on the test, recheck each step of the answer to be
sure you haven't made a mistake. Then label your answer to help the grader find it.

Short Answer. This kind of test requires you to answer each question in several
sentences rather than the longer answer required on an essay exam. You study for it
much as you do for an essay exam.

Take Home. This type of exam is really a series of short themes which you prepare
outside of class, using whatever resources you want. Professors usually set a limit on the
amount of time you are to spend writing the exam, but students who score high often
exceed this time limit considerably. The professor expects you to produce well-
crafted answers when you're working with both books and time in the quiet of your
own room.

True-False. You read a statement and pronounce it true or false. It's as simple as
that. Don't try to interpret a statement too closely—most true-false questions are
clearly stated—but do look out for words like *always, never* or *only* which usually
indicate that the statement is false.

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Ins and Outs of Cramming

Europe's first universities appeared in the 12th century. The final examination originated at about the same time, and no doubt, the first students to take finals were also the first students to cram for them.

Both the final exam and cramming retain some of the flavor of their medieval origins: the final bears obvious resemblances to the Inquisition and the torture rack; the all-night vigil evokes images of burning the midnight oil, and candles at both ends.

Though the preponderance of professorial opinion and scientific study through the centuries has been anti-cramming—and occasionally scholars express wonder at the persistence of the custom—the purpose of cramming is quite obvious. Without it, student life as we know it today could not exist. Cramming separates the diligent from the casual student and enables the latter to have fulfilling and amusing college careers, while the studious consistently make the grades.

Even conscientious scholars cram occasionally—or at least, they claim to be cramming, even though everyone knows they have been reading two chapters a night since the first day of class and typing their lecture notes onto 3 x 5 cards. "Cramming" means different things to different folks.

Let's define the terms. *Cramming* refers to any last-minute, last-ditch effort to master an abundance of new material. The word "new" is key. For the purpose of this treatise, cramming is different from *final reviewing*, any last-minute, last-ditch effort to organize and brush up on previously learned material. An *all-nighter* is any last-minute, last-ditch effort of studying or term-paper writing, as a result of which the effortee sleeps less than four hours. (For our purposes, you need not actually see the rosy-fingered dawn to qualify; it's the thought, or lack of it, that counts.)

Now with a firm grasp on the definitions, let us state unequivocally the facts of the matter:

1. Cramming, despite its usefulness as a social institution, is useless as a means of passing final exams.

2. Final reviewing, on the other hand, is an extremely useful study tool that works with moderate to high success.

3. All-nighters are a common and harmless tool for writing term papers, but all-nighters and exams go together like oil and water.

If you insist upon cramming, as

**The more you
learn,
the more you
forget.**

**The more you
forget,
the less you
know.**

So why study?

by DON AKCHIN

defined, we offer you no encouragement, only a sincere "good luck" and a prayer that your departure from the university will be as painless and trauma-free as possible, under the circumstances. Sorry, kid, it just doesn't cut the mustard. Here's why.

The Mechanics of Memory

The brain seems to have two memory systems, short-term memory and long-term memory. Information in short-term memory has this nasty habit of dissolving into nothingness in 24 hours or less. Also, short-term memory has a space shortage. When some new information comes in and there's no room, some of the old information gets bumped out, never to be seen or heard from again.

Cramming information into short-term memory obviously won't do. The more you learn, the more you forget. The more you forget, the less you know. So why study?

Your only hope is to arrange a fast transfer from short-term memory to long-term memory, a permanent storage vault with unlimited space capacity. The way to do that, apparently, is to rehearse the information several times. This labels it as something you intend to keep. But if you're pushed for time, the transfer may not reach long-term memory in time. The scientific evidence indicates it takes awhile for long-term memory to consolidate new input. Some of the evidence suggests that sleep helps the consoli-

dation (a point which has a bearing on the wisdom of all-nighters). Some scientists theorize that dreams are the transfer itself—instant replays of the day's short-term memory holdings, broken down in smaller bits and on their way to cold storage in long-term memory.

Most crammers never get the material past short-term memory; it may or may not hang around there long enough to do any good on the test.

Several other facts about learning work against cramming. One is the problem of interference—when you learn something new, it may cause you to forget something old. If you study all night and then stop to talk to a friend on your way to class, the conversation is new input that may interfere with what you just memorized—especially if it's still bouncing precariously in short-term memory. Another fact is that it's far easier to relearn something you already knew once than to start from the beginning.

For many students the difference between a cram and a review is a good set of lecture notes. Even if you don't look at your notes until just before tests, the concentration and effort you exerted to listen and then write down what you heard—in your own words—means you learned it. Every word may not be in long-term memory, but a large chunk of it probably is, just waiting for you to pluck it out.

The most "scientific" way to study, then, would be to review your notes and books the very last thing at night. Then go directly to bed (no interference) and "sleep on it." That should consolidate the new information into long-term memory. In the morning recite once or twice to be sure it's all there.

The professorial wisdom on cramming is summed up by this advice from a campus psychologist: "I'm for cramming at the beginning. If you really want to learn well, read the material three or four times at the start of the quarter. If you learn it well then, you'll only have to review it."

In the best of all possible worlds, every student would follow this sage advice. But then, in the best of all possible worlds, every college student would study for the pure joy of seeking knowledge and final exams would be unnecessary.

Staff writer Don Akchin had a successful college career and promptly forgot everything.

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A 1 Independent		B 5		C 6	
Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATΩ-B	3 0	Economics	3 0
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Fencing hopes to improve

By Jeanette Wing
(Jeanette Wing '79 is a member of the MIT Women's Fencing team.)

Struggling to maintain a winning record has never been a problem for the MIT Women's Varsity Fencing Team (4-3) until this year. After a 13-3 loss to rival Radcliffe temporarily halted the team's winning (2-1) record of last December, MIT routed Concord-Carlisle 12-4 on January 11 for

Following this victory the women split last weekend's meets, with a close defeat to Dartmouth 10-6 to again tie the win-loss record, and a comeback victory against SMU 9-7 to give the team a winning edge in the season record.

Saturday, SMU's weaker women were no match for the quicker and more aggressive MIT team. Captain Michelle Pret-

tacks that left them motionless. Jeanette won the meet's bout, also contributing wins, scoring most on feint-disengagement. Meredith Boice '77 meet off with a bout added another win round. Julia Shimaing more carefully previous two bouts.

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Do you worry about exams weeks in advance? Have trouble concentrating when you study? Before, during and after exam week, do you show such signs of stress as rapid heartbeat, nausea or dizziness? If so, you just might have a condition known as "test anxiety."

College psychologists studying this phenomenon over the past few years estimate that 20 percent of all college students have moderate cases of test anxiety—enough to lower their grade point averages by one full point. As many as half of these students may have anxiety serious enough to require treatment in the form of behavior modification.

One psychologist who pioneered in the diagnosis and treatment of test anxiety is Dr. Richard M. Suinn, head of the Department of Psychology at Colorado State University in Fort Collins and psychologist for the U.S. Olympic Ski Team.

Suinn is quick to emphasize that some degree of anxiety is good. "Moderate anxiety can facilitate maximum performance by leading to increased motivation, heightened alertness and greater concentration," he says.

Dr. Carol Schneider of Colorado University's Student Health Center puts it this way, "If you don't have enough anxiety, you don't study. If too much, you perform badly despite good preparation."

What causes test anxiety? As with many stress-related conditions, the causes are varied: your teachers and parents may expect too much, you may be an over-achiever, you may have an excessive need to please people or too much fear of failure.

Lower-than-expected grades and occasional panic are not necessarily indicators of test anxiety. For example, suppose you came from a small high school where the academic demands were relaxed, where you were number one without having to try very hard. Suddenly, you find yourself in a college environment where your classmates are the pick of big-city high schools, where the courses are tough and faculty demands high, where competition is



until the last possible moment, because studying only reminds you how much you have yet to learn.

If you are having problems studying or taking tests, you should seek help from your campus counseling center. Don't waste valuable time trying to study harder; if test anxiety is your problem, more studying won't help.

Putting Your Anxiety To Rest

The most popular technique for easing test anxiety is called "systematic desensitization." This is a form of behavior modification originally developed by Dr. Joseph Wolpe, a psychiatrist at Temple University, to treat phobias.

Desensitization helps students unlearn a destructive behavior pattern and replace it with a constructive and beneficial one—or in this case to replace their anxiety reactions with relaxation and calm.

The program consists of three steps: the first step is learning to relax deeply and completely; next, through "hierarchy construction" and desensitization itself, students are taught to reproduce deep relaxation in situations that normally arouse anxiety.

The first step, muscle relaxation, is effective for the simple reason that a person cannot have incompatible responses occurring simultaneously. You cannot be tense, and relaxed at the same time.

This step involves isometric-like tensing of muscle groups (biceps, shoulders, chest) followed by relaxation of these same groups. Another part of the relaxation training is rhythmic breathing: taking slow, deep breaths helps replace tension with feelings of calm and control. All of these exercises demonstrate the contrast between tension and relaxation, making students more aware of physical tensions and better able to defuse tension before it builds up.

Once the student can successfully relax his muscles at will, he is ready for the next step: learning to deal with conditions which trigger feelings of anxiety.

The student is instructed to use his relaxation skills while a threatening

continued on page 20

Fear and Trembling at Exam Time

great and grading is hard. You find yourself struggling to get "C's" instead of the "A's" you were used to. Your lower grades may or may not be attributable to test anxiety.

However, you might be among the test-anxious if you display some of the following symptoms:

- Midway through a test, you find yourself looking around, wondering how other people are doing, worrying about failing the test and wondering what will happen if you do.

- When you read test questions, the words are meaningless. You have to re-read the questions two and three times to comprehend them.

- During tests you are plotting ways to escape—sneaking out, turning in a blank test, fainting.

- You often wish you were out of school and working—especially just before tests.

- You panic as time runs out during a test.

- You postpone studying for exams

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IM Basketball Standings

A 1 Independent		B 5		C 6		Team	
Team	W L	Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATQ-B	3 0	Economics	3 0		
The "Macks"	6 2	QX Orgy	2 0	XFCI	3 1		
Economics	5 3	QX B	3 1	QDX Outhouse	2 1		
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1		
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3		
Sloan "A"	1 5	NRSA B	1 3	BOP "C"	0 2		
Second West	1 8	ΠΑΦ "B"	0 3	Korean Stds.	0 3		
A 1 Living Group		B 6		C 7		Team	
Team	W L	Team	W L	Team	W L	Team	W L
ΔT "A"	6 1	Nodules	2 0	ΣXC	3 0		
ΔTΔ "A"	6 2	KΣ Ball. Hdrs.	3 1	ΣΦC1	2 0		
Fiji "A"	5 3	ΣX B	2 1	ΔT "GRRR"	2 1		
Baker Bullets	4 3	ΦBE B	3 2	Fiji	1 1		
MacGregor	2 5	Fiji B	1 2	ΔT "C"	1 2		
The Bojacks	0 8	ΦΔΘ	1 2	ΔXA "C"	0 2		
		8-leavers	0 4	ΔKEC	0 3		
A 2 Living Group		C 8		Team		Team	
Team	W L	Team	W L	Team	W L	Team	W L
ΣAE "A"	6 0	C 1	0 0	1st	0 0		
ΔXA "A"	5 2	Team	W L	Wis	0 0		
ΔKE "A"	4 2	4th West	3 1	Dev	0 0		
2001	3 4	EO "Snakes"	3 1	ΠΔ	0 0		
ΑΕΠ	2 4	HoJo	3 1	ΕΘ	0 0		
Chocolate City	2 5	Burton 1C	2 1	ΘΔ	0 0		
ΠΑΦ "XTC"	1 6	Sick Puppies	1 2	NRI:	0 0		
B 1		ΦΚΣ	0 3	C 9	0 0		
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ΦΚΣ "B"	5 1			Con	0 0		
Burton Fives	4 2	C 2	0 3	Sec	0 0		
From A to B	4 2	Team	W L	XΦ	0 0		
Nuclear Eng	3 3	Air Force ROTC	5 0	"C-	0 0		
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ΙKA	1 4	E. Prus. Blue Boys	2 3	Jac	0 0		
Ashdown	1 4	7W Enforcers	2 3	C 1	0 0		
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Team	W L	C 3	0 0	Am	0 0		
Transports	4 0	Team	W L	AE	0 0		
Chokin' Tokers I	4 2	Chinese Stds	4 0	ΣΦ	0 0		
System Dynamics	3 3	ΑΔΦ	3 1	B.S.	0 0		
Hydros 2	2 2	Mailards	2 2	KΣ	0 0		
TFΦ "S & D"	2 3	ΦX C	2 2	Lee	0 0		
Mac C	2 4	Nudes Inc	1 3	"C-	0 0		
N. House V & II	2 4	K-Entry Killers	0 4	D	0 0		
ΣAE Bouncers				Team	W L		
B 3				Am	0 0		
Team	W L	C 4	0 0	AE	0 0		
B T B	3 0	Team	W L	ΣΦ	0 0		
Hydros I	3 1	ΦΣ	4 0	B.S.	0 0		
ΣΦΕ "B"	2 1	Hillel Macabees	2 0	KΣ	0 0		
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Datamen	1 3	B M F's II	2 2	"C-	0 0		
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New III Stooges	1 3	MacGregor E	1 3	Vr	0 0		
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ΣAE B1	4 0	Team	W L	WI	0 0		
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Sloan B	3 1	Tn City Tycoons	4 1				
Abusers	3 2	Aero-Astro	4 2				
ΑΕΠ	2 3	Burton 5 Smokers	2 2				
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Chem Eng	1 3	Baker WPOD	0 4				
Burton H. Toey	0 5	Roaches	0 4				

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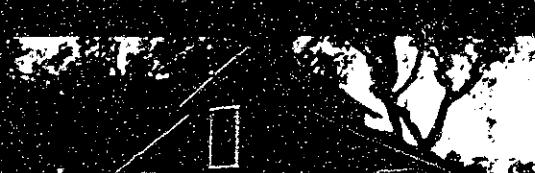
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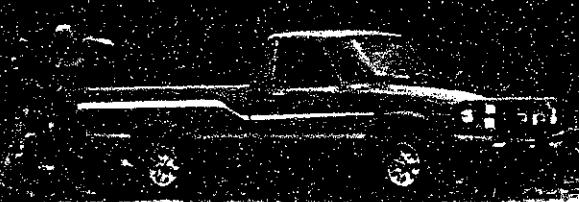
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Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATQ-B	3 0	Economics	3 0
The "Macks"	6 2	ΘΔX Orgy	2 0	ΧΦ C1	3 1
Economics	5 3	ΘX B	3 1	ΘΔX Outhouse	2 1
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan A'	1 5	NRSA B	1 3	ΒΘΠ "C"	0 2
Second West	1 8	ΠΔΦ "B"	0 3	Korean Stds.	0 3

A 1 Living Group		B 6		C 7	
Team	W L	Team	W L	Team	W L
ΔT A'	6 1	Nodules	2 0	ΣX C	3 0
ΔTΔ A	6 2	KΣ Ball. Hdls	3 1	ΣΦΕ C1	2 0
Fiji A'	5 3	ΣX B	2 1	ΔTΔ "GRRR"	2 1
Baker Bullets	4 3	ΣΒΕ B	3 2	Fiji	1 1
MacGregor	2 6	ΦΒΕ B	1 2	ΔT "C"	1 2
The Bojacks	0 8	ΦΔΦ	1 2	ΔXΑ "C"	0 2

A 2 Living Group		B 7		C 8	
Team	W L	Team	W L	Team	W L
ΣAE A'	6 0	C 1	Team	1st E. Redneck	3 0
ΔXΑ A	5 2	Team	W L		
ΔKE A'	4 2	4th West	3 1		
2001	3 4	ΕΘ "Snakes"	3 1		
ΔΕΠ	2 4	HoJo	3 1		
Chocolate City	2 5	Burton 1C	2 1		
ΠΔΦ "XTC"	1 6	Sick Puppies	1 2		

B 1		C 2		C 3	
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Burton Fives	4 2	Air Force ROTC	5 0		
From A to B	4 2	Les Tares	3 2		
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ΒΘΠ A	1 2	7W Enforcers	2 3		
ΠΔΑ	1 4	XM1 Sports	0 5		

B 2		C 4		C 5	
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Transports	4 0	Team	W L		
Chokin Tokers I	4 2	Chinese Stds	4 0		
System Dynamics	3 3	ΔΔΦ	3 1		
Hydros 2	2 2	Mallards	2 2		
ΤΕΦ S & Ds	2 3	ΘX C	2 2		
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ΣΔΕ Bouncers	1 2				

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Hydros I	3 1	ΘΞ	4 0		
ΣΦΕ "B"	2 1	Hillel Macabees	2 0		
The Filters	2 2	Tetazoo	2 1		
Datamen	1 3	B M F's II	2 2		
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tacks that motionless. won the bout, also scoring on feint-d. Meredith B meet off with added another round. Julia in the previous two tance and wa Please

continued from page 17
image or cue is presented, such as: "You're taking your exam. As you're looking over the questions, you can feel the tension in the pit of your stomach. Your eyes are wandering around the room and your thoughts are jumping from place to place."

The group leader presents from 12 to 20 of these scenes, arranged in order from least tension-provoking to most tension-provoking. The first scene may be hearing about someone else who must take a test. The scenes progress to announcement of a test in your class in two weeks, studying for it, walking to the test site, seeing a question you don't know how to answer, seeing other people finish while you are still working, and finally talking it over with classmates afterwards.

In the final step of the program, students are exposed to the entire range of images, all the time exercising new-found powers of relaxation.

Those Nagging Doubts

Desensitization basically works by controlling the physical response to anxiety—muscle tension. Anxiety has mental and emotional responses as well, and some new treatment programs are appearing on college campuses which focus on the "worry" component of anxiety. (Most of these programs incorporate desensitiza-

Just when everything is going well, you have that dream again. The one where someone hands you a test paper. Biology 202 Final Exam. Biology 202? You've never been to that class before!

You pull out your dog-eared class schedule and there it is—Biology 202, 12 p.m. to 1 p.m., Monday through Friday. How could you have forgotten to go to the class for a whole term?

But you have, and now you're staring at 50 true-false questions. The people around you are hunched over their papers, furiously scratching out answers. They've finished the first page already.

The questions swim in front of you. You check your brain's file folder on biology. It's empty. Boy, this is going to look great on your grade report—two "A's," three "B's" and an "F." Your eyes dart about, frantically searching for the nearest exit. You've got to get out of this nightmare!

"Don't leave!" says psychologist and dream expert Patricia Garfield. Stay in that dream classroom and cope with the test. If you run away, the nightmare will only sneak back

tion into their sessions, too.)

One example is a "cognitive modification" program developed by Dr. Michael Weissberg, director of the counseling center at Grand Valley State College in Allendale, Michigan. Weissberg combines desensitization with "cognitive restructuring," a therapy which confronts and disarms irrational thoughts that feed anxiety.

Weissberg's program makes students aware of the thoughts and worries they are experiencing while taking tests and studying for them. Anxious students tend to worry about everything. They are quick to blame themselves when things go wrong. They often feel a strong need for others' approval, and link their performance with winning or losing that approval. They also tend to see grades and test scores as measures of their personal worth; doing badly means to them that they are worthless as persons. They fear that failure will bring dire consequences.

In Weissberg's program, students focus on their thoughts. The truth is separated from gross exaggeration, the rational from the irrational, the useful from the self-defeating. Then students are given "coping thoughts" they can use to counter irrational thoughts when they reappear.

"I think everybody has these kinds of irrational thoughts," says Weiss-

berg, "but a able to cope out coping to build up the to be anxious more down."

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left her opponents Jeanette Wing '78 and her ninth deciding bout, contributing three total most of her touches in engage attacks. Wing '78 started the bout with a 5-1 and her win in the next Shimaoka '80, fending off more than in her bouts, kept her switched for her opponents (turn to page 11)

majority of people are with them. People with thoughts thoughts that their self-esteem continue to rise and get more upset and on themselves." Sensitization and cognitive therapy have proved very effective in reducing anxiety. Interestingly, such programs by themselves do not improve the grades of students who attend anxiety sessions. For this reason, most test-anxious students have poor study habits. A study program combined with anxiety sessions has consistently improved grades. One facing exam week, Dr. Suinn has some tips on how you can help yourself: to be comfortable with anxiety. If you have a headache, you can precipitate anxiety in yourself. If you schedule stressful situations before exams, stay away from them. If you irritate you, the examination place a early: relax, clear your mind, and then read around in the areas you are interested in before choosing. Take time to find a topic you will like.

After sleep, you will wake up and do it with both eyes

aims are behavior practicing to Garfield. "And we are practicing behavior of conquer," we are practicing with a real-life situation.

In a dream, you feel guilty about Biology 202, perhaps neglecting something important in your waking life. If an "F" in a dream bothers you, it's because you're worried about what you're worried about in real life. If you have an exam coming up, don't panic and run for it. Face the test. Cope with it in your dream, and then with the teacher to take it. Or have someone knock on the door to tell you it's a terrible mistake, and you take the test after all. If you dream to it, your dream has a happy ending.

When you wake up, think the dream was trying to tell you something. Give it a late, late show in your dreams, and it will give you an interesting ending.

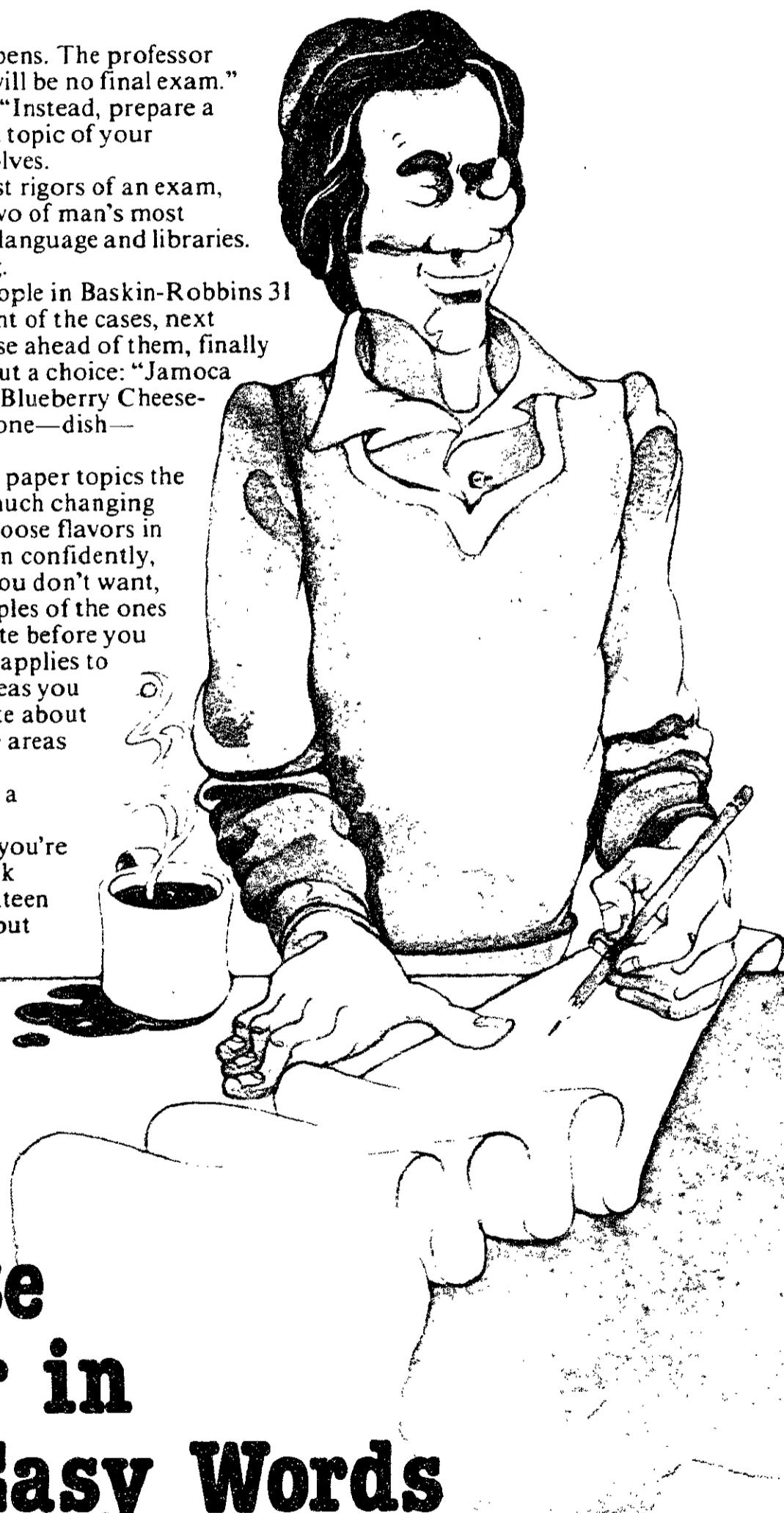
Sooner or later it happens. The professor announces, "There will be no final exam." You smile. He adds, "Instead, prepare a 16-page paper—on a topic of your choosing." Your smile dissolves.

You sit, denied the modest rigors of an exam, asked instead to confront two of man's most intimidating achievements: language and libraries. On a topic of your choosing.

Choosing. Ever watch people in Baskin-Robbins 31 Flavors? First pacing in front of the cases, next urging their friends to choose ahead of them, finally in almost a panic blurting out a choice: "Jamoca Almond Fudge with—uh—Blueberry Cheesecake—no—Pistachio in a cone—dish—cone."

Most people choose term paper topics the same way, in a panic with much changing of mind. The best way to choose flavors in Baskin-Robbins is to walk in confidently, rule out firmly the flavors you don't want, and then demand taste samples of the ones you think you do want. Taste before you choose. The same principle applies to term papers: rule out the areas you definitely don't want to write about and then read around in the areas you are interested in before choosing. Take time to find a topic you will like.

Limiting. When you feel you're getting close to a topic, think narrow—really narrow. Sixteen pages may sound like a lot but it's less than most Sports



How To Write a Paper in 1,000 Easy Words

Sport

IM Basketball Standings

A 1 Independent		B 6		C 6	
Team	W L	Team	W L	Team	W L
Medel's Mutants	6 2	ATD-B	3 0	Economics	3 0
The 'Macks'	6 2	ΘΔX Orgy	2 0	ΧΦC1	3 1
Economics	5 3	ΩX B	3 1	ΘΔX Outhouse	2 1
Mechanical Eng	4 3	Dorkatrons	1 1	Vigilantes C2	2 1
B-Ball Team	4 4	Tong Xue Hui	1 3	English House	1 3
Sloan 'A	1 5	NRSA B	1 3	ΒΘΠ "C"	0 2
Second West	1 8	ΠΙΦ "B"	0 3	Korean Stds	0 3
A 1 Living Group		B 6		C 7	
Team	W L	Team	W L	Team	W L
ΣΤΔ A	6 1	Nodules	2 0	ΣΧC	3 0
ΣΤΔ A	6 2	ΚΣ "Bait. Hdrs	3 1	ΣΦΕC1	2 0
Fiji A	5 3	ΣX B	2 1	ΣΤΔ "GRRR"	2 1
Baker Bullets	4 3	ΦΒΕ B	3 2	Fiji	1 1
MacGregor	2 6	Fiji B	1 2	ΣΤΔ "C"	1 2
The Bojacks	0 8	ΦΔΘ	1 2	ΑΧΑ "C"	0 2
		B-levers	0 4	ΣΚΕC	0 3
A 2 Living Group		C 8		Team	
Team	W L	Team	W L	Team	W L
ΣΑΕ A	6 0	C 1	1st E Redneck		3 0
ΑΧΑ "A"	5 2	Team	W L		
ΣΚΕ A	4 2	4th West	3 1		
2001	3 4	ΕΘ "Snakes"	3 1		
ΑΕΠ	2 4	HoJo	3 1		
Chocolate City	2 5	Burton 1C	2 1		
ΠΑΦ "XTC"	1 6	Sick Puppies	1 2		
B 1		ΦΚΣ			
Team	W L	Team	W L		
ΦΚΣ "B"	5 1	Coalition	0 3		
Burton Fives	4 2	C 2			
From A to B	4 2	Team	W L		
Nuclear Eng	3 3	Air Force ROTC	5 0		
Vigilantes "B"	2 3	Les Tares	3 2		
ΒΟΠ A	1 2	Vigilantes C1	3 2		
ΗΧΑ	1 4	E Plus Blue Boys	2 3		
Asdown	1 4	7W Enforcers	2 3		
B 2		XM1 Sports	0 5		
Team	W L	Team	W L		
Transports	4 0	C 3			
Chokin Tokers I	4 2	Team	W L		
System Dynamics	3 3	Chinese Stds	4 0		
Hydros 2	2 2	ΑΔΦ	3 1		
ΤΕΦ S & Ds	2 3	Mailards	2 2		
Mac C	2 4	ΟX C	2 2		
N House V & II	2 4	Nudes Inc	1 3		
ΣΑΕ Bouncers	1 2	K-Entry Killers	0 4		
B 3		C 4			
Team	W L	Team	W L		
B T B	3 0	C 5			
Hydros I	3 1	Team	W L		
ΣΕΔ "B"	2 1	Thunderbolts	4 0		
The Fitters	2 2	Tri City Tycoons	4 1		
Datamen	1 3	Aero-Astro	4 2		
Club Latino	1 3	Burton 5 Smokers	2 2		
New III Stooges	1 3	B M F's I	2 3		
		Baker WPOD	0 4		
		Roaches	0 4		

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Fencing hopes to improve

By Jeanette Wing
(Jeanette Wing '79 is a member of
the MIT Women's Fencing team.)

Struggling to maintain a winning
record has never been a problem for the MIT Women's
Varsity Fencing Team (4-3) until
this year. After a 13-3 loss to rival
Radcliffe temporarily halted the
team's winning (2-1) record of last
December, MIT routed Concord-
Carlisle 12-4 on January 11 for
the second time in the team's
history.

Following this victory the
women split last weekend's meets,
with a close defeat to Dartmouth
10-6 to again tie the win-loss
record, and a comeback victory
against SMU 9-7 to give the team a
winning edge in the season
record.

Saturday, SMU's weaker
women were no match for the
quicker and more aggressive MIT
team. Captain Michelle Pret-
tyman '79 won all three of her
bouts with fast and vicious at-
tacks that left her op-
tionless. Jeanette Wi-

tions, which flesh out your point
of view, then wrap it all
minding people what they
been. An outline helps you
to do this. A paper is
beginning, middle and
understood by readers.

A short paper—say 1,000 words—may not need as
much as a longer one since
there's less time for a reader to be confused. But with a longer
reader needs help from
get through. A beginning
tells folks, a middle which
tells 'em again, and an end which
tells 'em yet again, is on-
language. The trouble
ing the Hearst formula that
the paper will be
phrase "This paper is about
with an identical sentence
amended. This is dull. At
writing is scary. Approach
and choosing a topic is
enough. But wrestling with
often squashes any zest to
bring to writing. Anybody
happily on a phone
(speaking maybe 3,000 words). But when asked
same number of words
jaunty telephonist becomes
petrified of "This paper
sentences—in a word.
Because written language
and Rules kill all the fun
you Self-Conscious.

Try not to be hamstrung.
Your ear knows more than
Remember the old high
aboo about sentence fragmentation
again at the third para-
article. Every sentence
fragment, but your ear
accepted that. Fragments
ironclad taboo, and any
mar book will say so (in
Fragments that offend
wrong, but musical
stress or color are accepted
formal writing).

Let your ear do the
fragments, dangling clauses
most of your rhetorica
probably cure themselves
paper aloud, listen to you write.
Thinking of language
will not only improve your writing
but also make your writing
you feel you need a greater
standing of language. re-
text sometime leisurely
not writing a paper. But
writing, set aside self-criticism
and simply tell people what
to say. On a topic of your
course.

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and carry with them 12 MIT units.

Famous Failures

Six Convincing Examples That Grades Aren't Everything

by LISA GREENBERG

Education is replete with examples of people who failed academically in one way or another but who achieved excellence and recognition nonetheless. So when your next paper is returned pulsating with four different colors of ink and you fail miserably on a midterm, console yourself with these anecdotes.



Comic Relief

Woody Allen claims he never did a lick of homework. He spent all his spare time writing jokes. This artistic dedication went unappreciated by his teachers, who called his parents to school so often his former classmates still recognize them on the street.

The homely comic attended both New York University and City College of New York, but was quickly kicked out of both schools.

"I never actually failed a college course," Allen has said. "It was always a very indefinite 'D.'"



Thrown Out With Style

Buckminster Fuller would have been a fifth-generation Harvard man had he graduated. But he soon grew to loathe the closed social systems of

the ivy-covered institution. Fuller wanted to leave the university, but with style. Merely flunking out or withdrawing would have been too mundane.

While his classmates sweated over midyear exams, Fuller left for New York with his tuition money. He attracted the attention of several Ziegfeld showgirls by sending champagne and flowers to their dressing room, and treated the ladies to a lavish dinner that far exceeded the price of tuition. When word of his exploits and unpaid bills reached Harvard, Fuller was promptly expelled for "irresponsible conduct."



Easy Essays

Essay exams may have gotten *Washington Post* reporter Carl Bernstein through high school. He was a terrible student in everything but English.

"The only thing I could do was write," he once said. "I'd pass the essay exams and flunk the true-false."

Bernstein, who broke the Watergate story along with *Post* reporter Bob Woodward, rated homework low in priority. At 16 he spent all his free time working as a copyboy in

the *Washington Star* newsroom, waiting eagerly for even the smallest writing assignment to come his way.



Remedial English

Sir Winston Churchill, famous for his eloquent oratory, did not always have an impressive command of the English language. The late British prime minister flunked grammar in primary school. He credited his later mastery of the tongue to the help of an excellent remedial English teacher.

Churchill also had trouble passing his army entrance exam. Aided by a mathematics "crammer" (tutor), the late statesman passed the test on his third try.



Rebellious Attitude

Albert Einstein hated high school and was asked to leave because his "rebellious attitude" had a negative effect on other students.

The independent thinker

found it meaningless to memorize facts and grammar rules, so he lagged behind his classmates in most subjects. But he was light-years ahead of them in math.

After dropping out of high school, Einstein applied to a technical university. But he flunked the entrance exam, doing badly in everything but math. University officials suggested he attend a less confining high school where he could brush up on other subjects. Upon graduation from this school, Einstein was automatically admitted to the university.



A Late Bloomer

Some great thinkers get off to an early start. Others, such as business philosopher Peter Drucker, are more subtle about revealing their mental talents.

Drucker was a painfully slow learner in primary school. His third grade teacher found him especially frustrating and announced to the class one day: "Peter Drucker is both stupid and lazy."

Today, Drucker is a popular lecturer and consultant, as well as the author of 10 highly respected books on business, management and economics.

He once said he is glad his frustrated third grade teacher had to keep him in class. "Today the same teacher could move the child to a slow track," he said. "Once you are in that slow track you don't get out."

Lisa Greenberg hasn't failed anything yet except her first driving test.

